SPECIFICATIONS

County of San Benito
RESOURCE MANAGEMENT AGENCY

JUVENILE HALL BUILDING IMPROVEMENTS

708 Flynn Road, Hollister, CA

PROJECT #PWB-1803

CONSTRUCTION DOCUMENTS
February 5, 2018

APPROVED AS TO LEGAL FORM: San Benito County Counsel's Office
Shirley L. Murphy, Deputy County Counsel Date _____

APPROVED: San Benito County Board of Supervisors
Anthony Botelho, Chair Date _____

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SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Work shown on Drawings and Specifications.

B. Work by County.

C. Owner (County)-furnished products.

D. Contractor's use of site.

E. County Occupancy.

1.2 WORK INCLUDED

A. Work of this Contract is for the renovation of the San Benito County Juvenile Hall, based on the following general scopes of work (Work specified on construction documents dated **October 27th, 2017**, including subsequent addenda, unless otherwise indicated):
   1. Accessible Path of Travel Upgrades – Site improvements.
   2. Addition of new AC paving w/ basketball court striping and standards.
   3. Resealing of existing AC paving w/ tennis and volleyball striping and standards.
   4. New site drainage and detention pond.
   5. Replacement of Intake Bathroom fixtures and finishes. New CMU privacy wall and shower.
   6. Finish upgrades to Court Room and Offices.
   7. Finish upgrades and new stainless steel privacy doors in inmate shower stalls.
   8. Bid Alternates:
      a) Replace lighting in Dayroom
      b) New flooring in Dayroom

B. The facility will remain operational during construction, but the specific areas within project scope will be temporary vacated for the construction as needed. Refer to drawings and specifications for additional information.

1.3 CONTRACTOR'S USE OF SITE AND PREMISES

A. Contractor shall have limited use of the site and premises throughout the construction period. Refer to Division 0 – General Conditions.

1.4 COUNTY OCCUPANCY

A. Schedule Work to accommodate County Juvenile Hall occupancy.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 11 09
CONTRACT CONSIDERATIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cash Allowances.

B. Schedule of Values.

C. Application for Payment.

D. Defect assessment.

E. Non-payment for rejected Work.

F. Change procedures.

G. Alternates.

H. Unit prices.

1.2 MATERIAL AND LABOR CASH ALLOWANCES

A. Include in the Contract Sum all Allowances stated herein.

B. Costs Included in Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts; delivery to site and applicable taxes.

C. Funds will be drawn from Allowance amount only by written authorization of the County.

D. At closeout of Contract, funds remaining in Allowance amount will be credited to County by Change Order.

E. Whenever costs are more than Allowance amount, the Contract Sum will be adjusted accordingly by Change Order.

F. Contractor Responsibilities:

1. Assist Architect in selection of products and suppliers.

2. Obtain proposals from suppliers and offer recommendations.

3. On notification of selection by County, execute agreement with designated supplier.

4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery and product handling at site.

5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for damage.

1.3 SCHEDULE OF VALUES

A. Submit Schedule of Values.

B. Format: Submit typed schedule based upon the attached Schedule of Values augmented by the Table of Contents of this Project Manual. Identify each line item with number and title of the major Specification Section.

C. Include in each line item, the amount of Allowances specified in this Section.

D. Include within each line item, a directly proportional amount of Contractor's overhead and profit.

E. Revise schedule to list approved Change Orders, on continuation sheet, with each Application for Payment.

1.4 NON-PAYMENT FOR REJECTED WORK

A. Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.

2. Products determined to be unacceptable before or after placement.

3. Products not completely unloaded from the transporting vehicle.

4. Products placed beyond the lines and levels of the required Work.

5. Products remaining on hand after completion of the Work.

6. Loading, hauling and disposing of rejected products.

1.5 CHANGE PROCEDURES

A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the General Conditions.

B. The Architect may issue a Price Request (PR) which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications. Contractor shall prepare and submit a detailed estimate within 14 days.

C. Any change in the Work which involves the adjustment to Contract Sum or Contract Time shall be properly certified by the Contractor as indicated in the General Conditions of the Contract.

D. The Contractor may propose a change by submitting a Proposed Change Order (PCO) to the Architect, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum and

Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors if applicable.

E. Stipulated Sum Change Order: Based on Price Request and Contractor's fixed price quotation or Proposed Change Order Request as approved by Architect.

F. Time and Material/Force Account Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the General Conditions of the Contract.

G. Maintain detailed records of Work done on Time and Material/Force Account basis. Provide full information required for evaluation required for evaluation of proposed changes, and to substantiate costs for changes in the Work as indicated in the General Conditions of the Contract.

H. Construction Change Directive: Architect may issue a directive, signed by the County and Architect, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum or Contract Time. Promptly execute the change.

I. Force Account Directive: Architect may issue a directive, signed by the County and Architect, to proceed with a change in the Work on a direct cost basis as indicated in the General Conditions of the Contract.

J. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

K. All Addenda (changes and/or revisions prior to Award of Contract) and Change Orders (changes and revisions after Award of Contract) shall be approved by the Architect and the Division of the State Architect prior to start of construction covered by those changes and/or revisions.

L. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

M. Promptly revise progress schedules to reflect any changes in Contract Time, revise sub-schedules to adjust times for other items of Work affected by the change and resubmit.

N. Promptly enter changes in Project Record Documents.

1.6 ALTERNATES

A. An Alternate is an amount proposed by the bidder and stated on the Bid Form for certain Work defined herein that may be added to or deducted from the Base Bid amount if the County decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

B. The cost for each Alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work.

C. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not specifically mentioned as part of the Alternate.

D. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.

E. Coordinate related Work and modify surrounding Work as required to integrate the Work of each Alternate.

F. Execute accepted Alternates under the same conditions as other Work of this Contract.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

FORM A (Sample)
Schedule of Values
Modernization/New Construction

Project: Project Manager:

General Contractor: Date:

Item No.		Description of Work		% of Total Contract		Total Dollar Amount Value
1		Hazardous Material Abatement		%		$
2		Buildings Demolition and Clearing		%		$
3		Site Work		%		$
4		Foundation		%		$
5		Structural Steel		%		$
6		Rough Carpentry		%		$
7		Custom Wood Case Work		%		$
8		Finish Carpentry		%		$
9		Insulation and Thermal Protection		%		$
10		Roofing		%		$
11		Sheet Metal Flashing and Trim		%		$
12		Doors		%		$
13		Windows		%		$
14		Finish Hardware		%		$
15		Glazing		%		$
16		Ceramic Tile Wall Finish		%		$
17		Acoustical Ceilings		%		$
18		Flooring		%		$
19		Interior Painting		%		$
20		Exterior Painting		%		$
21		Restrooms and Toilet Partitions		%		$
22		Marker Boards and Tackboards		%		$
23		Toilet and Bath Accessories		%		$
24		Furniture and Equipment		%		$
25		Window Shades		%		$
26		Fire Alarm System		%		$
27		Plumbing and Fixtures		%		$
28		HVAC		%		$
29		Electrical		%		$
30		Interior Lighting		%		$
31		Technology / Computers		%		$
32		Security Systems		%		$
33		Telecommunications		%		$

34		Wall Systems		%		$
35		Painting		%		$
36		Stage Upgrade		%		$
37		Kitchen Upgrade		%		$
38		Exterior Lighting		%		$
39		Portable Installation		%		$
40		Fire Life Safety		%		$
41		Elevator		%		$
42		As-Builts		%		$
		Totals:		%		$

COST BREAKDOWN FORM FOR CONTRACT MODIFICATION

SHEET 1 OF 4

One separate form shall be used by Contractor, each first tier subcontractor and each lower tier subcontractor. One form for each shall be used for each Change Order. One form for each, for each day shall be used for Force-Account Work.

CHANGE ORDER NUMBER: DATE:

CHANGE ORDER DESCRIPTION:

CONTRACTOR:

LABOR				
NAME	**CLASSIFICATION**	**HOURS**	**RATE**	**TOTAL**
TOTAL LABOR COSTS (Enter here and on Line 1 of Sheet 4)				

COST BREAKDOWN FORM FOR CONTRACT MODIFICATION

SHEET 2 OF 4

MATERIALS	
DESCRIPTION	**COST**
TOTAL MATERIAL COSTS (Enter here and on Line 4 of Sheet 4)	

COST BREAKDOWN FOR CONTRACT MODIFICATION

SHEET 3 of 4

EQUIPMENT RENTAL				
SIZE & TYPE OF EQUIPMENT	**IDENT. NO.**	**HOURS**	**RATE**	**TOTAL**
TOTAL EQUIPMENT RENTAL COSTS (Enter here and on Line 8 of Sheet 4)				

SPECIALIST	
DESCRIPTION OF WORK	**COST**
TOTAL SPECIALIST COSTS (Enter here and on Line 11 of Sheet 4)	

COST BREAKDOWN FORM FOR CONTRACT MODIFICATION

SHEET 4 OF 4

TOTAL COSTS			
1.	TOTAL LABOR COSTS	$	
2.	15% of Line 1	$	
3.	ADD Lines 1 and 2		*$*
4.	TOTAL MATERIAL COSTS	$	
5.	15% of Line 4	$	
6.	8.25% of Line 4	$	
7.	ADD Lines 4, 5, and 6		*$*
8.	TOTAL EQUIPMENT RENTAL COSTS	$	
9.	15% of Line 8	$	
10.	ADD Lines 8 and 9		*$*
11.	TOTAL SPECIALIST COSTS	$	
12.	15% of Line 11	$	
13.	ADD Lines 11 and 12		*$*
14.	**TOTAL COST OF EXTRA WORK** (Add Lines 3, 7, 10 and 13.)		**$**

CONTRACTOR OR AUTHORIZED REPRESENTATIVE

APPROVED BY INSPECTOR

RECAPITULATION COSTS FORM FOR CONTRACT MODIFICATION

Use this form to add total costs of extra Work of Contractor, first tier subcontractors and lower tier subcontractors. One form shall be used for each Change Order. One form shall be used each day for Force Account Work.

1. TOTAL COST OF CONTRACTOR'S EXTRA WORK (Line 14 from Sheet 4 of 4)		
2. **First Tier Subcontractor**	**Cost of Extra Work**	
2a.	$	
2b.	$	
2c.	$	
2d.	$	
2e.	$	
2f.	$	
3. **Total Costs of First Tier Subcontractors' Extra Work** (Add Lines 2a through 2f.)		**$**
4. **5% of Line 3**		**$**
5. **Lower Tier Subcontractor**	**Cost of Extra Work**	
5a.	$	
5b.	$	
5c.	$	
5d.	$	
6. **Total Costs of Lower Tier Subcontractors' Extra Work** (Add Lines 5a through 5f.)		**$**
7. **10% of Line 6**		**$**
8. **CONTRACT CHANGE ORDER AMOUNT** (Add Lines 1, 3, 4, 6, and 7.)		**$**

CONTRACTOR OR AUTHORIZED REPRESENTATIVE

APPROVED BY INSPECTOR

CHANGE ORDER

CHANGE ORDER #:

PROJECT:

CONTRACT #:

CONTRACTOR:

CHANGE ORDER SCOPE:

CHANGE ORDER AMOUNT:

CONTRACT TIME ADJUSTMENT:

ADJUSTED COMPLETION DATE:

The signatures of the County and Contractor below indicate acceptance by both parties of the costs and time adjustments noted above as a part of this change to the Work. In conformance with the requirements of the Contract Documents, the Contractor agrees that said cost and time adjustments are full satisfaction for the extra Work described in this Change Order. No other costs arising out of or connected with the performance of the extra Work described in this Change Order, of any nature, may be recovered by the Contractor, except as authorized under the Contract Documents.

Approved by:

Contractor	Owner
Title	Title
Date	Date

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SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 -GENERAL

1.1 SECTION INCLUDES

A. Change Procedures.

B. Schedule of Values.

1.2 CHANGE PROCEDURES

A. Written Order: Architect may make minor changes in Work not involving adjustment to Contract Price or Contract Time as authorized by General Conditions, by issuing Architect's Supplemental Instructions or Instruction Bulletins.

B. Request For Proposal: Architect may issue a Request For Proposal or Instruction Bulletin that includes detailed description of proposed change with supplementary or revised drawings and specifications, change in Contract Time for executing change and period of time during which requested price will be considered valid. Contractor shall prepare and submit the proposal within 7 days from issuance of the Request for Proposal or Instruction Bulletin.

C. Change Order Request: Contractor may propose changes by submitting Change Order Request to Architect, describing proposed change and its full effect on the Work. Include statements describing reason for change, and effect on Contract Price and Contract Time with full documentation and statement describing effect on Work by separate or other contractors. Document any requested substitutions in accordance with Division 01, General Requirements.

D. Construction Change Directive: Architect may issue Construction Change Directives or Instruction Bulletins signed by Owner and Architect directing Contractor to proceed with change in Work expeditiously without delay. Document will describe changes in Work and may designate method of determining any change in Contract Price or Contract Time, if any. Contractor shall promptly execute the change.

E. Change Order: Issued in accordance with the General Conditions and Supplementary Conditions.

F. Stipulated Price Change Order: Based on a Request For Proposal or Instruction Bulletin and Contractor's fixed price quotation or Contractor's for Change Order Request as approved by Architect.

G. Time and Material Change Orders: Submit itemized account and supporting data after completion of change within time limits indicated in Conditions of Contract. Architect will determine change allowable In Contract Price and Contract Time as provided in Contract Documents.

1. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in Work.
2. Refer to the General Conditions for additional requirements.

H. Change Order Forms: AIA G701 Change Order or other form agreed with Anderson Family Health Center's Manager.

I. Execution of Change Orders: Architect will issue Change Orders for signature of parties as provided in Conditions of the Contract.

1.3 SCHEDULE OF VALUES

A. Submit printed schedule on AIA Forms G702 and G703 -Application and Certificate for Payment and Continuation Sheet. Contractor's standard form or electronic media printout will be considered, submit sample forms to Architect for approval.
   1. Submit application for progress payment in accordance with the General and Supplementary Conditions.

B. Submit Schedule of Values in duplicate within 15 calendar days after date of Owner-Contractor Agreement for Architect's approval.

C. Format: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of the major Specification Section. Identify site mobilization and bonds and insurance. List mechanical, electrical, plumbing and fire protection Work separately for each building and for site Work.

D. Break down the plumbing and mechanical portions of the work at a minimum into a rough, finish, Including air balance and electrical portion.

E. Include separate line items, showing amount of General Contractor's overhead and profit, bonds and insurance, supervision, and then remainder of general items.

F. Revise schedule to list approved Chang Order with each Application for Payment.

PART 2 – PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION

SECTION 01 25 00
PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Product options.

B. Substitutions.

1.2 DEFINITIONS

A. Requests for changes in products, materials, or equipment required by Contract Documents proposed by the Contractor prior to and after award of the Contract are considered requests for substitutions. Contractor must refer to the Instructions to Bidders and the General Conditions for limitations on when requests for substitution(s) are permitted on this Project. The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Owner or Architect.

2. Specified options of products, materials, and equipment included in Contract Documents.

B. Whenever in the Specifications any material, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be used for the purpose of facilitating the description of that material, process, or article desired, and shall be assumed to be followed by the words "or approved equal," except when the product is designated to match others in use on a particular public improvement whether completed or in the course of completion.

1.3 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description may be used.

B. Products Specified by Naming One or More Manufacturers with or without Provision for Substitution: Provide products of manufacturers named and meeting Specifications, with substitution of products or manufacturers only when submitted under provisions of this Section.

1.4 LIMITATIONS ON SUBSTITUTIONS SUBMITTED PRIOR TO THE RECEIPT OF BIDS

A. The bid shall be based upon the standards of quality established by those items of equipment and/or materials which are specifically identified in the Contract Documents.

B. Architect may consider requests for substitutions of specified equipment and/or materials only prior to bid and only when requests are received by Architect within the time indicated in the Instructions to Bidders.

C. Consideration by Architect of a substitution request will be made only if request is made in strict conformance with provisions of this Section.

D. Burden of proof of merit of requested substitution is the responsibility of the entity requesting the substitution.

E. It is the sole responsibility of the entity requesting the substitution to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.

F. Architect's decision on substitution requests are final and do not require documentation or justification.

G. When substitution is not accepted, provide specified product.

H. Substitute products shall not be included within the bid without written acceptance by Addendum.

1.5 LIMITATIONS ON SUBSTITUTIONS

A. Owner will not consider any substitution requests submitted after the bids are opened. All requests for substitutions shall be submitted prior to the date the bids are opened and in compliance with the provisions stated herein in the Contract Documents.

B. The Contract is based upon the standards of quality established by those items of equipment and/or materials which are specifically identified in the Contract Documents.

C. Consideration by Architect will be made only if request is made in strict conformance with provisions of this Section.

1.6 REGULATORY REQUIREMENTS

A. It shall be the responsibility of the entity requesting the substitution to obtain all regulatory approvals required for proposed substitutions.

B. All regulatory approvals shall be obtained for proposed substitutions prior to submittal of substitution request to Architect.

C. All costs incurred by the Owner in obtaining regulatory approvals for proposed substitutions to include the costs of the Architect and any authority having jurisdiction over the project shall be reimbursed to the Owner. Costs of these services shall be reimbursed regardless of final acceptance or rejection of substitution.

1.7 SUBSTITUTION REPRESENTATION

A. In submitting a request for substitution, the entity requesting the substitution makes the representation that he or she:

1. Has investigated the proposed substitution and has determined that it meets or exceeds the quality level of the specified product.

2. Has determined that all components of the proposed substitution are identical and fully interchangeable with the product name and number specified.

3. Will provide the same warranty or guarantee for the substitution as for the specified product.

4. Will coordinate installation and make changes to other Work which may be required for the Work to be completed with no additional cost to the Owner.

5. Waives claims for additional cost or time extension which may subsequently become apparent.

6. Will reimburse Owner for the cost of Architect's review or redesign services associated with substitution request, including reviews by agencies having jurisdiction. Additional time required for Architect or agency reviews shall not be construed as construction delay.

B. Maximum of two substitutions may be proposed.

C. If specified product is no longer available, Contractor shall provide proof from the specified manufacturer indicating the product is not available.

1.8 SUBMITTAL PROCEDURE

A. Submit two digital copies of each request.

B. Submit request with Architect's Substitution Request Form. Form may be obtained at the office of the Architect. Substitution requests received without request form will be returned un-reviewed.

C. Limit each request to one proposed substitution.

D. Request to include sufficient data so that direct comparison of proposed substitution can be made.

E. Provide complete documentation for each request. Documentation shall include the following information, as appropriate, as a minimum:

1. Statement of cause for substitution request.

2. Identify product by Specification Section and Article Number.

3. Provide manufacturer's name, address, and phone number. List fabricators, suppliers, and installers as appropriate.

4. List similar projects where proposed substitution has been used, dates of installation and names of Architect and Owner.

5. List availability of maintenance services and replacement materials.

6. Documented or confirmation of regulatory approval.

7. Product Data, including drawings and descriptions of products.

8. Fabrication and installation procedures.

9. Samples of proposed substitutions.

10. Itemized comparison of significant qualities of the proposed substitution with those of the product specified. Significant qualities may include size, weight, durability, performance requirements and visual effects.

11. Coordination information, including a list of changes or modifications needed to other items of Work that will become necessary to accommodate proposed substitution.

12. Statement on the substitutions effect on the construction schedule.

13. Cost information including a proposal of the net reduction in cost to the Contract Sum if the proposed bid substitution is accepted.

14. Certification that the substitution is equal to or better in every respect to that required by the Contract Documents and that substitution will perform adequately in the application intended.

15. Waiver of right to additional payment or time that may subsequently become necessary because of failure of substitution to perform adequately.

F. Inadequate warranty, vagueness of submittal, failure to meet specified requirements, or submittal of insufficient data will be cause for rejection of substitution request.

1.9 ARCHITECT'S REVIEW

A. The Architect will accept or reject proposed substitution within a reasonable amount of time.

B. If a decision on a substitution cannot be made prior to the date set for bid opening, the product specified shall be used.

C. There shall be no claim for additional time for review of proposed substitutions.

D. Final acceptance of a substitution submitted prior to the date established for the receipt of bids will be in the form of an addendum.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 -GENERAL

1.01 SECTION INCLUDES

A. Project Management and Coordination: Project Coordination, Project Meetings.

B. Construction Progress Documentation: Construction Progress Schedule, Construction Photographs, Two-week Look Ahead Schedule.

C. Submittal Procedures: Shop Drawings, Product Data, Samples, Source Quality Control Reports, Deferred Approval Items, Finishes Materials Schedule, Coordinated Drawings.

1.02 PROJECT COORDINATION

A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Coordinate space requirements and installation of mechanical and electrical Work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installation, for maintenance, and for repairs.

D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for any portions of Work designated for Owner's occupancy.

F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.03 PRECONSTRUCTION MEETING

A. Architect will schedule meeting after Notice of Award.

B. Attendance Required: Architect, Prime Contractors, Major Subcontractors, and key Owner personnel.

C. Agenda:

1. Contract Agreement:
    a. Transmit signed originals of the Agreement to the Owner.
    b. Transmit Attachment Certifications to the Owner.
    c. Transmit Performance and Payment Bonds to the Owner.
    d. Transmit Certificates of Insurance to the Owner.
    e. Review General and Supplementary Conditions.

2. Receive documentation from Contractor:
    a. Construction Progress Schedule.
    b. Schedule of Values.
    c. List of Subcontractors with addresses and phone numbers.
    d. List of Submittals and estimated date of submittal.

3. Project Administration:
    a. Application for Payment, Lien Release, Record Drawings.
    b. Change Order Requests, Change Orders, Request For Proposals, Construction Change Directive Instruction Bulletins. Preparation of Change Orders by Architect according to 2016 California Administrative Code, Code of Regulations Title 24 Part 1, Section 7-153.
    c. Submittals
    d. Deferred Approval Submittals
    e. Substitution procedures.
    f. Site Meetings.
    g. Testing Laboratory.
    h. Verified Reports.

4. Special Owner Conditions:
    a. Temporary Facilities.
    b. Owner Occupancy.
    c. Work by Owner.
    d. Access to Site -Owner Contact.

5. Construction Process:
    a. Contractor shall discuss overview of construction.
    b. Contractor shall identify items to be selected by Architect/Owner and date

selections must be made.
c. Contractor shall review special requirements for equipment, safety, and noise.

D. Architect will record minutes and distribute copies within seven days after meeting to participants and those affected by decisions made.

1.04 PROGRESS MEETINGS

A. Architect Owner's Representative will schedule and administer meetings throughout progress of Work as needed.

B. Architect Owner's Representative will make arrangement for meetings, prepare agenda with copies for participants, and preside at meetings.

C. Attendance Required: Project Coordinator, Prime Contractors, Major Subcontractors and Suppliers, Project Inspector, key Owner personnel and Architect as appropriate to agenda topics for each meeting.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of Construction Progress Schedule.
7. Corrective measures to regain projected schedules.
8. Maintenance of quality and work standards.
9. Effect of proposed changes on progress schedule and coordination.
10. Other business relating to Work.
11. Deferred Approval submittals and timelines.
12. Review of Mockup Assembly.

E. Architect will record minutes and distribute copies within seven days after meeting to participants, and those affected by decisions made.

1.05 PREINSTALLATION MEETING

A. When required in individual Specification Sections, convene pre-installation meeting before starting Work of Section.

B. Require attendance of parties directly affecting, or affected by, Work of specific

Section.

C. Notify Architect four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of installation, preparation and installation procedures.
   2. Review coordination with related Work.

E. Contractor shall record minutes and distribute copies within three days after meeting to participants, Architect and those affected by decisions made.

1.06 SUBMITTAL PROCEDURES

A. General Contractor shall transmit separate request-for EACH Section submittal directly to Architect.
   1. Bind submittals sturdily, neatly label covers.
   2. Include job number as it appears on Contract Documents.
   3. Include local review authority approval number, if applicable.

B. Sequentially number transmittal forms. Re-submittals shall have original number with alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and Specification Section number, as appropriate.
   1. Provide name telephone number of individual who may be contacted for further information.

D. Apply Contractor's dated stamp with Contractor's original signature or initials affixed thereto, certifying that review, verification of products required field dimensions, adjacent construction Work, and coordination of information is .according to requirements of Work and Contract Documents. Stamped signatures or initials are not acceptable.

E. Schedule submittals to expedite Project. Coordinate submission of related items.
1. Make submittals according to Construction Schedule and adequate enough in advance of scheduled dates of installation to provide required time for reviews for securing necessary approvals for possible revision and re-submittal and for placing orders and securing delivery.
   2. Schedule submittals such that related materials and assemblies that support or are affected by the submitted materials are either submitted simultaneously or in order of installation sequence such that impacts and coordination can be evaluated as part of the review.
   3. Late submittals, not in accordance with the "Schedule for Submission of Shop Drawings, Product Data and Samples" and the Construction Schedule, will not be considered an acceptable reason for initiating a substitution requests caused by late ordering and procurement of materials.

F. Identify variations from Contract Documents and Product or system limitations that is detrimental to performance of completed Work.

G. Substitutions: Submit only as approved per Section 01 60 00, state effect of approved substitution on construction schedule, and changes required in other work or products.

H. Owner-Directed Substitution Approval: Substitution submittals specifically directed by Owner to be approved by the Architect for this project shall pertain to a specific item only. The Architect's stamped approval of Owner-Directed Substitution does not constitute approval for any other item, other projects or parts of project. A Change Order shall be prepared to effect the Owner's authorization of Owner-Directed Substitution.

I. Provide space for Contractor and Architect review stamps.

J. Revise and resubmit submittals in their entirety, identify changes made since previous submittal.

K. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

L. Determine and verify field dimensions and conditions, materials, catalog numbers and similar data.

M. Coordinate as required with all trades and all public agencies involved.

N. Unless otherwise specifically authorized by Architect, make submittals in groups containing associated items within the same Section. Architect may reject partial submittals as not complying with provisions of this Section.

O. Submittals for Deferred Approved Items, refer to listed items in this Section and the specific requirements therein in addition to requirements above.

1.07 CONSTRUCTION PROGRESS SCHEDULE

A. Submit Preliminary Construction Progress Schedule in duplicate within 15 calendar days after Notice to Proceed for Architect's review.
   1. Schedule shall reflect amount of time stipulated in Agreement.
   2. If the Contractor proposes an earlier completion dated than stipulated in the Agreement, Change Order will be issued reflecting revised completion date at no change in Contract Sum.

B. Revise and resubmit as required.

C. Scheduling may utilize programs including: Microsoft Project Schedule,

Primavera Project Planner (P3), Primavera SureTrack Project Manager, Meridian Project Systems or similar programs addressing the requirements.

D. Submit computer generated network analysis diagram using Critical Path Method, generally as outlined in Associated General Contractors of America (AGC) publication "Construction Planning and Scheduling", 1997 Edition.

E. Indicate complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates and duration. Ownership of float time is shared commodity, not for exclusive use by either party. Use float time to make up Work behind schedule until float time is depleted. Submittals returned in less time than allowed by contract, shall be used to reduce Contractor time extension requests.

F. Indicate Milestones and target date and their activities including completion dates.

G. No Time extensions will be granted nor delay damages paid until a delay occurs that impacts the schedule consumes all available float or contingency time available, and extends the work beyond the contract completion date.

H. Indicate estimated percentage of completion for each item of Work at each submission.

I. Schedule for Submission of Shop Drawings, Product Data and Samples: Incorporate "Schedule for Submission of Shop Drawings, Product Data and Samples" in Construction Progress Schedule. This schedule shall include submittal dates required for shop drawings, product data, samples and product delivery dates, including Deferred Approval Items and including those items furnished by Owner. Provide time in schedule for Architect's review of submittals according to Contract Timetable. Allow 21 calendar days for submittals requiring consultant's review. Allow 30 calendar days for review submittals of Door Hardware - Section 08 71 00 and Hollow Metal Doors and Frames - Section 08 13 13.

J. Submit revised schedules with each Application for Payment identifying changes since previous version.

K. As a minimum allow 15 calendar days in schedule for final inspections before final acceptance. Include time to correct punch list items prior to final acceptance.

1.08 COORDINATED DRAWINGS

A. Submit drawings that indicate routing, locations sizes, types and number of components in concealed spaces where potential conflict may occur between structures, mechanical, electrical, Automatic Fire Sprinkler System (AFSS),

communications and ceiling suspension systems.

B. Indicate locations of ceiling penetrations and surface-mounted items. Provide cross sections at areas to indicate proper support of ceilings and non-interference with work of other Sections of specifications. Cross sections shall indicate coordination required and proposed solutions for routing of elements where potential conflict exists. Reproduction of Architect's reflected ceiling plan is not acceptable.

C. Drawings shall be based on field measurements, shop drawings and product data.

D. Conflicts shall be brought to Architect's attention immediately.

E. Submit to Architect, in writing requests for clarification or interpretations that will affect intent and/or scope of Contract Documents.

F. Coordinated drawings shall indicate each class of Work in affected area. Drawing or written submittal shall include Contractor's recommendations for solution of any potential conflicts as well as recommendations tendered by any Work of any Section of Specifications which may be affected thereby.

G. Submit coordinated drawings in scale of not less than 1/8" = 1'-0" with necessary sections and profiles at an appropriate, clearly readable enlarged scale. Submit coordinated drawings as one electronic (CD) copy and one bond (hard) Copy.

H. Architect will review submittals, make appropriate notations and comments to ensure solution meets intent of Contract Documents and then return to Contractor for implementation.

I. Contractor shall be responsible for proper coordination of Work of Sections of Specifications in execution of coordinated drawings. Installation of materials, components or equipment under one Section of Specifications without full and complete, agreement, knowledge and consent by fabricators of adjacent or otherwise related or affected Work will not be approved.

J. It shall be incumbent upon Contractor that fabricators of Work involved in execution of coordinated drawings be informed, consulted and advised in sufficient advance time to arrive at solutions where no extension of contract time for extra cost to Owner will be approved due to Contractor's negligence in expeditious, timely submittal of coordinated drawings.

1.09 SHOP DRAWINGS

A. Within 15 days from Notice to Proceed, submit to Architect for review and acceptance, "Schedule, for Submission of Shop Drawings, Product Data and Samples" (Submission Schedule) listing required submittals and review dates.

Schedule shall allow sufficient time for checking by Architect Incorporate Submission Schedule in Construction Progress Schedule. Days: Calendar Days.

1. Additionally, submit all Shop Drawings, Product Data and Samples according to the following guidelines. Guidelines are provided to allow Architect and Engineers adequate time for review and is not intended to dictate contractor's means and methods:
   a. Contract of 180 to 270 days: Submit within 45 days from Notice to Proceed. Allow Architect 21 days to respond. Re-submittals: allow Contractor 10 days, and Architect 15 days to respond.

   b. Contract of 270 to 360 days: Submit within 60 days from Notice to Proceed. Allow Architect 21 days to respond. Re-submittals: allow Contractor 10 days, and Architect 15 days to respond.

   c. Contract of 360 to 450 day: Submit within 60 days from Notice to Proceed. Allow Architect 21 days to respond. Re-submittals: allow Contractor 15 days and Architect 21 days to respond.

   d. Contract of 450 days and longer: Contractor to schedule submittals. Architect shall have no less than 30 days to respond. Re-submittals: allow Contractor 15 days and Architect 21 days to respond.

B. Submit newly prepared information, drawn to accurate scale. Highlight, encircle or otherwise indicate deviations from Contract Documents. 'Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard 'information prepared without specific reference to Project will not be approved as shop drawings.

C. Shop drawings shall include fabrications and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. include following information:
   1. Dimensions
   2. Identification of products and materials included.
   3. Compliance with specified standards.
   4. Notation of coordination requirements.
   5. Notation of dimensions established by field measurement.

D. Sheet Size: Except for templates, patterns and similar full-size drawings, submit shop drawings on sheets at least 8-1/2 inch x 11 inch, but not larger than 30 inch x 42 inch.

E. Contractor shall review, stamp with his approval as herein required, and submit with reasonable promptness and in orderly sequence, according to Submittal Schedule, all shop drawings required by Contract Documents or subsequently by Architect as covered by modifications. Shop drawings shall be, properly identified. At time of submission Contractor shall inform Architect in writing and

with highlighted annotation on shop drawings of any deviation in shop drawings from requirements of Contract Documents.

F. Stamp: Each page of shop drawings shall bear Contractor's stamp, which shall signify Contractor's representation that he has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated information contained in shop drawings. Each stamp shall be accompanied by wet signature or initial of employee of Contractor who may be contacted for information. Stamped signatures or initials are not acceptable.

G. Method of Review: Make initial submittal of five (5) prints or bond copies and one (1) 20lb xerographic bond (reproducible) of shop drawings. Comments or corrections will be noted on reproducible and returned to Contractor, who shall identify all changes made since previous submittal and resubmit in same manner. When reviewed, reproducible will be stamped and returned to Contractor who shall make distribution of copies as required.

H. Processing Time
   1. Allow enough time for submittal review, including time for re-submittals, as follows:
      a. Time for review shall commence on Architects receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals. .
      b. In accordance with the Schedule for Submission of Shop Drawings, Product Data and Samples. Review of each submittal for conformance with design concept of Project and with information given In Contract Documents. Architect's favorable review of a. separate item shall not indicate acceptance of assembly in which that item functions. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
      c. Submittals requiring Consultants' Review: Where review of submittals by Architect's consultants is required, allow minimum 21 calendar days for review of each submittal. Allow minimum 30 calendar days for review submittals. of Door Hardware - Section 08 71 00 and Hollow Metal Doors and Frames - Section 08 13 13.

   2. Re-submittal Review: In accordance with the Schedule for Submission of Shop Drawings, Product Data and Samples for each re-submittal.

I. Submittal of shop drawings to Architect shall be made by Contractor with dated transmittal form or letter, and not by subcontractors or suppliers.

J. Architect's review of shop drawings shall not relieve Contractor of responsibility

for any deviation from requirements of Contract Documents unless Contractor has informed Architect in writing of such deviation at time of submission and Architect has given written acceptance to specific deviation, nor shall Architect's favorable review relieve Contractor from responsibility for errors or omissions in 'shop drawings.

K. No portion of Work requiring shop drawings shall be commenced until shop drawings have been returned with favorable review by Architect.

L. At Contractor's option, he may request and if Architect approves use Architect's computer-generated drawings in electronic format with costs incurred by this requests payable to Architect. Contractor's request must be in writing with list of drawings requested and CAD format required. Contractor assumes all liability for accuracy of shop drawings if he opts to use Architects drawings. Software for CAD formats requested by Contractor not currently available to Architect will be provided by Contractor at his own expense. Complete Cad Drawing Request Form at the end of this Section for request.
    1. Engineers' Drawings, CAD engineers' drawings are available only at discretion of the Engineer.

1.10 PRODUCT DATA

A. Submit within time required by Shop Drawings.

B. Submit six (6) copies. Four (4) copies will be retained by Architect.

C. Mark each copy to identify applicable products, models, options and other data. Supplement manufacturers' standard. data to provide information unique to this Project.

D. After review, distribute and provide copies for Record Documents.

1.11 SAMPLES

A. Submit within time required by Shop Drawings.

B. Submit samples to illustrate functional and aesthetic characteristics of product with integral parts and attachment devices. Coordinate sample submittals for interfacing Work.

C. Submit samples of finishes from the full range of manufacturers' standard colors, textures and patterns for Architect selections, or in custom colors selected.

D. Include identification on each sample with full Project information.

E. Submit minimum of three (3) samples or as, specified in Individual Sections of Specifications, two (2) of which will be retained by Architect.

F. Reviewed samples which may be used in the Work are indicated Sections of the Specifications, two (2) of which will be retained by the Architect.

G. Selection or rejection of samples will be determined by Architect in writing.

H. Colors: Materials that are visually related to other finishes require that subcontractors submit their samples before normally scheduled in order that color selection can be made for other items that are scheduled to be ordered earlier in construction schedule. Complete submittal of color charts and color samples shall be made before' related colors will be selected Architect. Contractor shall be responsible to coordinate submittal schedules so as not to delay Work.

1.12 FINISHES MATERIALS SCHEDULE

A. Submit in accordance with Submittal Procedures.

B. Submit Schedule verifying lead times of materials and products as noted in Finish Schedule.

1.13 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual Specification Sections, submit manufacturer's printed instruction for delivery, storage, assembly, installation, start-up, adjusting and finishing in quantities specified for product data.

B. Identify conflicts between manufacturer's instructions and contract documents.

1.14 MANUFACTURER'S CERTIFICATIONS

A. When specified in individual Specification Sections, submit manufacturers' certificate to Architect for review in quantities specified for product data.

B. Indicate that material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

1.15 SPECIAL PROCEDURES -ACCELERATION OF THE WORK

A. If, in judgment of Architect or Owner, it becomes necessary at any time to accelerate Work or portion thereof, Contractor, when ordered or directed by Architect or Owner, shall deploy workers in such portions of Project where directed to enable others to properly engage and carry on their work.
   1. If circumstances require that entire Work or portion thereof be completed at date earlier than Contract Completion Date as adjusted by change orders, Contractor, when ordered or directed by Owner or Architect, shall increase his forces, equipment, hours of work, and/or number of shifts and shall expedite delivery of materials to meet the altered completion date or dates ordered or directed. Any increase in cost to Contractor in compliance with such orders or directives will be adjusted in accordance with Contact Documents.

B. If, in judgment of Architect or Owner, Work is behind schedule and rate of placement-of work is inadequate to regain scheduled progress so as to ensure timely completion of Work or separable portion thereof, Contractor, when so informed by Architect or Owner, shall immediately take action to increase rate of Work placement.
   1. This shall be accomplished by anyone or combination of following or other suitable measures:
      a. An increase in working forces,
      b. An increase in equipment or tools, '
      c. An increase in hours of work or number of shifts,
      d. Expediting delivery of materials.

1. Contractor shall, within ten (10) calendar days after being so informed, notify Architect of specific measures taken and/or planned to increase rate of progress together with estimate of when scheduled progress will be regained. Should plan of action be deemed inadequate by Architect or Owner, Contractor will take additional steps or make adjustments as necessary to his plan of action until it meets with Architect's or Owner's approval.
2. Acceleration of Work will continue until scheduled progress is regained. Scheduled progress shall be established from latest revised approved· progress schedule for Project.
3. Timely completion will be understood as Contract Completion Date as revised by all time extensions granted at time acceleration is undertaken.
4. Contractor shall not be entitled to additional compensation for additional effort he applies to Work under terms of this sub-paragraph.

C. Any directive or order to accelerate Work will be in writing. Any directive or order terminating accelerated Work will be in writing.

1.16 DEFERRED APPROVAL ITEMS

A. In accordance with 2016 California Code of Regulations Title 24, Part 1, California Administrative Code, Section 7-126 Part 1, where certain items, equipment or portions of their installation cannot be fully detailed or structurally

calculated before selection of specific manufacturer, items or portions thereof may be indicated in Documents or herein as "Deferred Approval Items".

B. Items noted or listed in Contract Documents as "Deferred Approval" shall not be fabricated or installed until they have been approved by governing authority.

C. Submittals for approval shall be submitted within 30 days after Notice to Proceed to Architect for his review and signature before submitting to governing authority.

O. For Deferred Approval Items provided by the Contractor, Contractor shall be responsible for providing details, structural calculations, stamps and signatures and other necessary data or material as required in the affected section and herein, and complete installation of items and equipment without extra cost to Owner.

E. It should be noted no fixed time frame can be established for agency's approval. However, Contractor shall be responsible for time delays caused by his own late scheduling or incomplete drawings for deferred items.

1.17 SPECIAL TESTING

A. As required by State Fire Marshal Directive dated April 8, 1986, fire or smoke dampers shall be tested for specified performance in presence of Project Inspector. In event of unsatisfactory performance of any damper unit shall be replaced or repaired and retested in presence of Project Inspector at no cost to Owner.

B. Not more than one tenth of fire or smoke dampers in construction up to one hour rated shall · be tested for specified performance in presence of representative of State Fire Marshal's Office. Representative will witness activation of fire dampers in 2-hour or greater fire rated construction. In event of unsatisfactory performance of any damper unit shall be replaced or repaired and re-tested in presence of Fire Marshal at no cost to Owner. Random selection of dampers requiring testing shall be as directed by Fire Marshal. Contractor shall be responsible for scheduling and coordinating damper testing procedures.

1.18 TWO-WEEK LOOK AHEAD SCHEDULE

A. Submit a Two Week Look Ahead Schedule at each progress meeting which shall contain the following:

1. Be plotted in bar chart or time scale logic format and be of such size that all activity numbers and descriptions are clearly legible.
2. Be sorted by sub contractor responsibility, actual start, early start and total float.
3. Include activity ID, description and float for each activity.
4. Include all activities, completed, in progress and scheduled to start within the time frame of the date minus one week to the data date plus two weeks.

5. Schedule shall be updated and provided at each regular progress meeting for review and comparison to approved project schedule status.

PART 2 -PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials: As specified in product sections; match existing products and Work for patching and extending Work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing Work as standard.

C. Patching shall extend to point where patching is not evident unless directed otherwise by the Architect.

PART 3 -EXECUTION (NOT USED).

CAD DRAWING REQUEST FORM

Date: Job Number:
Project: Project Architect:

We _____
Contractor

Request the following listed CAD file Sheet Numbers for use in the execution of our Work under the Contract Documents of the subject project, and hereby assume all and sole responsibility of field verification and coordination with the Work of associated trades. .

The Contractor further agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Architect, its officers, directors, employees and subconsultants (collectively, Architect) against ·any damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising from or allegedly arising from or in any way connected with the unauthorized reuse or modification of the electronic flies by the Contractor or any person or entity that acquires or obtains the electronic files from or through the Contractor without the written authorization of the Architect.

Sheet No.	Dated	Sheet Title
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Signed: _____

Title: _____

Requested File Format

□DWG (Auto CAD, 2017)
□RVT (Revit, 2017)

Requested File Deliverable

□CD Rom
□E-MAIL (Zipped Files)

_____
Contractor's E-mail address

Signed: _____

Title: _____

Company: _____

Address: _____

Telephone: _____

Total payment enclosed herewith at the rate of $50.00 per sheet for Shop Drawings or As-Built Drawings: $_____ (checks made payable to Hibser Yamauchi Architects, Inc.). Drawing files available within 7 days from date of receipt of request.

Contact: Hibser Yamauchi Architects, Inc.
4602 2nd Street
Davis, CA 94618
Tel. (530) 758-1270/ Fax: (530) 758-4789
*Note: Requested Consultant Engineer's Drawings may be available at the discretion of the Consultant.

END OF SECTION

SECTION 01 31 19
COORDINATION AND MEETINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Coordination.

B. Field engineering.

C. Preconstruction conference.

D. Progress meetings.

E. Preinstallation conferences.

F. Post construction dedication.

1.2 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Prior to commencement of a particular type or kind of Work examine relevant information, Contract Documents, and subsequent data issued to the Project.

C. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. In locations where several elements of mechanical and electrical Work must be sequenced and positioned with precision in order to fit into available space,

prepare coordination drawings showing the actual conditions required for the installation. Prepare coordination drawings prior to purchasing, fabricating or installing any of the elements required to be coordinated.

G. Closing up of walls, partitions or furred spaces, backfilling and other covering up operations shall not proceed until all enclosed or covered Work and inspections have been completed. Verify before proceeding.

H. Coordinate completion and clean up of Work of separate Sections in preparation for completion and for portions of Work designated for County occupancy.

I. After County occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of County's activities.

J. Coordinate all utility company work in accordance with the General Conditions.

1.3 FIELD ENGINEERING

A. Contractor shall employ a Land Surveyor registered in the State of California and acceptable to the County.

B. Control datum for survey is that established by County provided survey. Contractor shall locate and protect survey control and reference points.

C. Replace dislocated survey control points based on original survey control.

D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

E. Upon completion of Work, submit certificate, signed by the Land Surveyor, that elevations and locations of Work are in conformance with Contract Documents. Record deviations on Record Drawings.

1.4 PRECONSTRUCTION CONFERENCE

A. The County will schedule a conference immediately after receipt of fully executed Contract Documents prior to project mobilization.

B. Mandatory Attendance: County, Inspector of Record, Architect, Contractor, Contractor's Project Manager, and Contractor's Job/Project Superintendent.

C. Optional Attendance: Architect's consultants, subcontractors, and utility company representatives.

D. Architect and Construction Manager will preside at conference, and Architect will review and approve minutes prior to distribution of copies.

E. Agenda:

1. Execution of County-Contractor Agreement.

2. Issue Notice to Proceed.

3. Submission of executed bonds and insurance certificates.

4. Distribution of Contract Documents.

5. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.

6. Designation of responsible personnel representing the parties.

7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

8. Scheduling.

1.5 PROGRESS MEETINGS

A. Construction Manager will schedule and administer meetings throughout progress of the Work at a minimum of once per week.

B. Construction Manager will make arrangements for meetings, prepare agenda, preside at meetings, record minutes (Field Reports), and distribute copies. Architect will review and approve all minutes prior to distribution.

C. Attendance Required: Job Superintendent, Construction Manager, Inspector of Record, Architect, and subcontractors and suppliers as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings. (Field Reports)

2. Review of Work progress.

3. Field observations, problems, and decisions.

4. Identification of problems, which impede planned progress.

5. Review of submittals schedule and status of submittals.

6. Review of off-site fabrication and delivery schedules.

7. Maintenance of construction schedule.

8. Corrective measures to regain projected schedules.

9. Planned progress during succeeding Work period.

10. Coordination of projected progress.

11. Maintenance of quality and Work standards.

12. Effect of proposed changes on progress schedule and coordination.

13. Other business relating to Work.

1.6 PREINSTALLATION CONFERENCES

A. When required in individual Specification Section, Contractor shall convene a preinstallation conference prior to commencing Work of the Section. Refer to individual Specification Section for timing requirements of conference.

B. Require attendance of parties directly affecting, or affected by, Work of the specific Section.

C. Notify Architect four (4) days in advance of meeting date.

D. Preinstallation conference to coincide with regularly scheduled progress meeting wherever possible.

E. Architect shall prepare agenda, preside at conference, record minutes, and distribute copies within two (2) days after conference to participants.

F. Review Contract Documents, conditions of installation, preparation and installation procedures, and coordination with related Work and manufacturer's recommendations.

G. Preinstallation Schedule: As a minimum, Work being installed under the following Sections will require preinstallation conferences. Contractor shall review the technical Specifications and add all additional requirements for preinstallation meetings contained in those Sections.

Section 02 41 16 – Building Demolition

Section 03 36 00 – Concrete Testing and Inspection

Section 07 13 00 – Weather Resistive Barrier and Flashing

Section 23 80 00 – Heating, Ventilating and Air-Conditioning.

Section 26 05 00 – Basic Electrical Materials and Methods.

1.7 POST CONSTRUCTION DEDICATION

A. Attendance Required: Project Superintendent, Project Manager, major subcontractors, County, and Architect.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

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SECTION 01 32 16
CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. References.

B. Performance requirements.

C. Quality assurance.

D. Qualifications.

E. Project record documents.

F. Submittals.

G. Review and evaluation.

H. Format.

I. Cost and schedule reports.

J. Early work schedule.

K. Construction schedule.

L. Short interval schedule.

M. Requested time adjustment schedule.

N. Recovery schedule.

O. Updating schedules.

P. Distribution.

1.2 REFERENCES

A. Construction Project Planning and Scheduling Guidelines, latest edition, available from The Associated General Contractors of America (AGC). (916) 371-2422.

B. CSI - Construction Specifications Institute MP-2-1 Master Format.

C. United States National Weather Service - Local Climatological Data.

1.3 PERFORMANCE REQUIREMENTS

A. Ensure adequate scheduling during construction activities so Work may be prosecuted in an orderly and expeditious manner within stipulated Contract Time.

B. Ensure coordination of Contractor and subcontractors at all levels.

C. Ensure coordination of submittals, fabrication, delivery, erection, installation, and testing of materials and equipment.

D. Ensure on-time delivery of County-furnished materials and equipment.

E. Ensure coordination of jurisdictional reviews.

F. Assist in preparation and evaluation of applications for payment.

G. Assist in monitoring progress of Work.

H. Assist in evaluation of proposed changes to Contract Time.

I. Assist in evaluation of proposed changes to Construction Schedule.

J. Assist in detection of schedule delays and identification of corrective actions.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Construction Planning and Scheduling Manual published by the AGC.

B. Maintain one copy of document on site.

C. In the event of discrepancy between the AGC publication and this Section, provisions of this Section shall govern.

1.5 QUALIFICATIONS

A. Scheduler: Contractor shall engage trained personnel or specialist consultant with five years minimum experience in scheduling construction work of a complexity and size comparable to this Project, who can demonstrate proficiency in the system used.

B. Administrative Personnel: Five years minimum experience in using and monitoring schedules on comparable projects.

1.6 PROJECT RECORD DOCUMENTS

A. Submit Record Documents under provisions of Section 01 78 39.

D. Submit one reproducible and two copies of final Record Construction Schedule which reflects actual construction of this Project.

C. Record Construction Schedule shall be certified for compliance with actual way Project was constructed.

D. Receipt of Record Construction Schedule shall be a condition precedent to any retainage release or final payment.

1.7 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Within ten (10) days from the Notice to Proceed submit proposed Early Work Schedule and preliminary Cost Report defining activities for first 60 days of Work.

C. Within 45 days from Notice of Award submit proposed Construction Schedule and final Cost Report.

D. Submit updated Construction Schedule with each Application for Payment.

E. Submit Short Interval Schedule at each Construction Progress Meeting.

F. Submit Time Adjustment Schedule within five days of commencement of a claimed delay.

G. Submit Recovery Schedules as required by completion of Work.

H. Submit one reproducible and two copies of each schedule and cost report.

1.8 REVIEW AND EVALUATION

A. Early Work Schedule shall be reviewed during Preconstruction Conference with County and Architect.

B. Within five days of receipt of County and Architect's comments provide satisfactory revision to Early Work Schedule or adequate justification for activities in question.

C. Acceptance by County of corrected Early Work Schedule shall be a condition precedent to making any progress payments for first 60 days of Contract.

D. Cost loaded values of Early Work Schedule shall be basis for determining progress payments during first 60 days of Contract.

E. Participate in joint review of Construction Schedule and Reports with County and Architect.

F. Within seven days of receipt of County and Architect's comments provide satisfactory revision to Construction Schedule or adequate justification for activities in question.

G. In the event that an activity or element of work is not detected by County or Architect review, such omission or error shall be corrected by next scheduled update and shall not affect Contract Time.

H. Acceptance by County of corrected Construction Schedule shall be a condition precedent to making any progress payments after first 60 days of Contract.

I. Cost-loaded values of Construction Schedule shall be basis for determining progress payments.

J. Review and acceptance by County and Architect of Early Work Schedule or Construction Schedule does not constitute responsibility whatsoever for accuracy or feasibility of schedules, nor does such acceptance expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, duration, manpower, cost or equipment loading stated, or implied on schedules.

1.9 FORMAT

A Prepare diagrams and supporting mathematical analyses using Precedence Diagramming Method, under concepts and methods outlined in AGC Construction Planning and Scheduling Manual.

B. Listings: Reading from left to right, in ascending order for each activity.

C. Diagram Size: 42 inches maximum height x width required.

D. Scale and Spacing: To allow for legible notations and revisions.

E. Illustrate order and interdependence of activities and sequence of Work.

F. Illustrate complete sequence of construction by activity.

G. Provide legend of symbols and abbreviations used.

1.10COST AND SCHEDULE REPORTS

A. Activity Analysis: Tabulate each activity of network diagram and identify for each activity:

1. Description.
2. Interface with outside contractors or agencies.
3. Number.
4. Preceding and following number.
5. Duration.
6. Earliest start date.
7. Earliest finish date.
8. Actual start date.
9. Actual finish date.
10. Latest start date.
11. Latest finish date.
12. Total and free float.
13. Identification of critical path activity.
14. Monetary value keyed to Schedule of Values.
15. Manpower requirements.
16. Responsibility.
17. Percentage complete.
18. Variance positive or negative.

B. Cost Report: Tabulate each activity of network diagram and identify for each activity:

1. Description.
2. Number.

3. Total cost.

4. Percentage complete.

5. Value prior to current period.

6. Value this period.

7. Value to date.

C. Required Sorts: List activities in sorts or groups:

1. By activity number.

2. By amount of float time in order of early start.

3. By responsibility in order of earliest start date.

4. In order of latest start dates.

5. In order of latest finish dates.

6. Application for payment sorted by Schedule of Values.

7. Listing of activities on critical path.

8. Listing of basic input data which generates schedule.

1.11 EARLY WORK SCHEDULE

A. Shall establish Scope of Work to be performed during first 60 days of Contract.

B. Shall designate critical path or paths.

C. Shall contain the following phases and activities:

1. Procurement activities to include mobilization, Shop Drawings and Sample submittals.

2. Identification of key and long-lead elements and realistic delivery dates.

3. Construction activities in units of whole days limited to 14 days for each activity except non-construction activities for procurement and delivery.

4. Approximate cost and duration of each activity.

D. Shall contain seasonal weather considerations. Seasonal rainfall shall be 10-year average for the month as evidenced by Local Climatological Data obtained from United States National Weather Service.

E. Activities shall be incorporated into Construction Schedule.

F. No application for payment will be evaluated or processed until Early Work Schedule has been submitted and reviewed.

G. Shall be updated on a monthly basis while Construction Schedule is being developed.

H. Failure to submit an adequate or accurate Early Work Schedule or failure to submit on established dates will be considered a breach of Contract.

1.12CONSTRUCTION SCHEDULE

A. Include Early Work Schedule as first 60 days of Construction Schedule.

B. Shall be a computer generated, time-scaled network diagram of activities.

C. Indicate a completion date for Project that is no later than required completion date subject to any time extensions processed as part of a Change Order.

D. Conform to mandatory dates specified in the Contract Documents.

E. Should schedule indicate a completion date earlier than any required completion date, County or Architect shall not be liable for any costs should Project be unable to be completed by such date.

F. Seasonal weather shall be considered in planning and scheduling of all Work. Seasonal rainfall shall be 10-year average for the month as evidenced by Local Climatological Data obtained from United States National Weather Service.

G. Level of detail shall correspond to complexity of Work involved.

H. Indicate procurement activities, delivery, and installation of County- furnished material and equipment.

I. Designate critical path or paths.

J. Subcontractor Work at all levels shall be included in schedule.

K. As developed shall show sequence and interdependence of activities required for complete performance of Work.

L. Shall be logical and show a coordinated plan of Work.

M. Show order of activities and major points of interface, including specific dates of completion.

N. Duration of activities shall be coordinated with subcontractors and suppliers and shall be best estimate of time required.

O. Shall show description, duration, and float for each activity.

P. Failure to include any activity shall not be an excuse for completing all Work by required completion date.

Q. Activities of long intervals shall be broken into increments no longer than 14 days, or a value over $20,000.00 unless approved by the County or it is non-construction activity for procurement and delivery.

R. An activity shall meet the following criteria:

1. Any portion or element of Work, action, or reaction that is precisely described, readily identifiable, and is a function of a logical sequential process.

2. Descriptions shall be clear and concise. Beginning and end shall be readily verifiable. Starts and finishes shall be scheduled by logical restraints.

3. Responsibility shall be identified with a single performing entity.

4. Additional codes shall identify building, floor, bid item, and CSI classification.

5. Assigned dollar value (cost-loading) of each activity shall cumulatively equal total Contract Amount. Mobilization, bond and insurance costs shall be separate. General Requirement costs, overhead, profit, shall be prorated throughout all activities. Activity costs shall correlate with Schedule of Values.

6. Each activity shall have manpower-loading assigned.

7. Major construction equipment shall be assigned to each activity.

8. Activities labeled start, continue or completion is not allowed.

S. For major equipment and materials show a sequence of activities including:

1. Preparation of Shop Drawings and Sample submissions.

2. Review of Shop Drawings and Samples.

3. Finish and color selection.

4. Fabrication and delivery.

5. Erection or installation.

6. Testing.

T. Include a minimum of 15 days prior to completion date for punch lists and clean up. No other activities shall be scheduled during this period.

1.13SHORT INTERVAL SCHEDULE

A. Shall be fully developed horizontal bar-chart-type schedule directly derived from Construction Schedule.

B. Prepare schedule on sheet of sufficient width to clearly show data.

C. Provide continuous heavy vertical line identifying first day of week.

D. Provide continuous subordinate vertical line identifying each day of week.

E. Identify activities by same activity number and description as Construction Schedule.

F. Show each activity in proper sequence.

G. Indicate graphically sequences necessary for related activities.

H. Indicate activities completed or in progress for previous two-week period.

I. Indicate activities scheduled for succeeding two-week period.

J. Further detail may be added if necessary to monitor schedule.

1.14REQUESTED TIME ADJUSTMENT SCHEDULE

A. Updated Construction Schedule shall not show a completion date later than the Contract Time, subject to any time extensions processed as part of a Change Order.

B. If an extension of time is requested, a separate schedule entitled "Requested Time Adjustment Schedule" shall be submitted to County and Architect.

C. Indicate requested adjustments in Contract Time which are due to changes or delays in completion of Work.

D. Extension request shall include forecast of Project completion date and actual achievement of any dates listed in the Agreement.

E. To the extent that any requests are pending at time of any Construction Schedule update, Time Adjustment Schedule shall also be updated.

F. Schedule shall be a time-scaled network analysis.

G. Accompany schedule with formal written time extension request and detailed impact analysis justifying extension.

H. Time impact analysis shall demonstrate time impact based upon date of delay, and status of construction at that time and event time computation of all affected activities. Event times shall be those as shown in latest Construction Schedule.

I. Activity delays shall not automatically constitute an extension of Contract Time.

J. Failure of subcontractors shall not be justification for an extension of time.

K. Float is not for the exclusive use or benefit of any single party. Float time shall be apportioned according to needs of project, as determined by the County.

L. Float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity durations, or imposed dates shall be apportioned according to benefit of Project.

M. Extensions will be granted only to extent that time adjustments to activities exceed total positive float of the critical path and extends Contract completion date.

N. County] shall not have an obligation to consider any time extension request unless requirements of Contract Documents, and specifically, but not limited to these requirements are complied with.

O. County shall not be responsible or liable for any construction acceleration due to failure of County to grant time extensions under Contract Documents should requested adjustments in Contract Time not substantially comply with submission and justification requirements of Contract for time extension requests.

P. In the event a Requested Time Adjustment Schedule and Time Impact Analysis are not submitted within 10 days after commencement of a delay, it is mutually agreed that delay does not require a Contract Time extension.

1.15RECOVERY SCHEDULE

A. When activities are behind Construction Schedule a supplementary Recovery Schedule shall be submitted.

B. Form and detail shall be sufficient to explain and display how activities will be rescheduled to regain compliance with Construction Schedule.

C. Maximum duration shall be one month and shall coincide with payment period.

D. Ten days prior to expiration of Recovery Schedule verification to determine if activities have regained compliance with Construction Schedule will be made. Based upon this verification the following will occur:

1. Supplemental Recovery Schedule will be submitted to address subsequent payment period.

2. Construction Schedule will be resumed.

1.16UPDATING SCHEDULES

A. Review and update schedule at least 10 days prior to submitting an Application for Payment.

B. Maintain schedule to record actual prosecution and progress.

C. Approved Change Orders that affect schedule shall be identified as separate new activities.

D. Change Orders of less than $5,000.00 value or less than three days duration need not be shown unless critical path is affected.

E. No other revisions shall be made to schedule unless authorized by County.

F. Provide narrative Progress Report at time of schedule update that details the following:

1. Activities or portions of activities completed during previous reporting period.

2. Actual start dates for activities currently in progress.

3. Deviations from critical path in days ahead or behind.

4. List of major construction equipment used during reporting period and any equipment idle.

5. Number of personnel by craft engaged on Work during reporting period.

6. Progress analysis describing problem areas.

7. Current and anticipated delay factors and their impact.

8. Proposed corrective actions and logic revisions for Recovery Schedule.
9. Proposed modifications, additions, deletions, and changes in logic of Construction Schedule.

G. Schedule update will form basis upon which progress payments will be made.

H. County will not be obligated to review or process Application for Payment until schedule and Progress Report have been submitted.

1.17DISTRIBUTION

A. Following joint review and acceptance of updated schedules distribute copies to County, Architect, and all other concerned parties.

B. Instruct recipients to promptly report in writing any problem anticipated by projections shown in schedule.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Proposed products list.

C. Shop Drawings.

D. Product Data.

E. Samples.

F. Manufacturers' instructions.

G. Manufacturers' certificates.

H. Deferred approval requirements.

I. Submittal schedule.

1.2 SUBMITTAL PROCEDURES

A. Transmit each submittal in conformance with requirements of this Section.

B. Sequentially number the transmittal forms. Resubmittals to have original number with a numerical suffix. Architect will not review more than 1 resubmittal for a specified product.

C. Identify Project and Architect's project number, Contractor, subcontractor or supplier; pertinent Drawing sheet and detail number(s), and Specification Section number, as appropriate.

D. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals without Contractor's stamp and signature will be returned without review. Incomplete submittals will be returned without review.

E. Schedule submittals to expedite the Project, and deliver to Architect. Schedule shall include all items requiring color selection to be simultaneously submitted.

F. Make submittals in groups containing associated and related items to make sure that information is available for checking each item when it is received. Submittals for all items requiring color selection must be received before any will be approved.

G. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

H. Make submittals far enough in advance of scheduled dates for installation to provide time for review and possible revisions and resubmission prior to approval and subsequent placement of orders.

I. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

J. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of the completed Work.

K. Provide space for Contractor and Architect review stamps.

L. Revise and resubmit submittals as required, identify all changes made since previous submittal.

M. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

N. Submittals not requested will not be recognized or processed. Submittals not requested will be returned without review.

1.3 PROPOSED PRODUCTS LIST

A. Within 10 calendar days after date of Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.4 SHOP DRAWINGS

A. Submit (5) five sets of printed Shop Drawings in accordance with the submittal list. Review comments will be shown on the transparency and Contractor may make and distribute such copies as are required for his purposes.

B. After review, distribute in accordance with procedures specified above and for Record Documents described in Section 01 78 39, Project Record Documents.

C. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

D. Do not use or allow others to use Shop Drawings which have been submitted and have been rejected.

1.5 PRODUCT DATA

A. When specified in individual Specification Sections, submit as a PDF and email to Architect and copy Owner staff and IOR.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

C. After review, distribute in accordance with procedures specified above and provide copies for Record Documents described in Section 01 78 39, Project Record Documents.

1.6 SAMPLES

A. Submit Samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate Sample submittals for interfacing Work.

B. Where specific colors or patterns are not indicated, provide materials and products specified in the full range of color, texture and pattern for selection by Architect. Range shall include standard stocked color/texture/pattern, standard color/texture/pattern not stocked, but available from manufacturer, and special color/ texture/pattern available from manufacturer as advertised in Product Data and brochures. Unless otherwise indicated in individual Specification Sections, Architect may select from any range at no additional cost to Owner.

C. Include identification on each Sample, with full Project information.

D. Submit (5) full samples.

E. Reviewed Samples which may be used in the Work are indicated in individual Specification Sections.

1.7 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual Specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.8 MANUFACTURER'S CERTIFICATES

A. When specified in individual Specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

1.9 MOCK-UP

A. Where indicated, provide mock-ups as required. Mock-ups shall be prepared per the Specifications and shall accurately and reasonably represent the quality of construction the Contractor will provide. If the mock-up or portions thereof do not adequately represent the quality of the Work specified, the Contractor shall modify the mock-up as needed.

B. Once completed to the Architect's satisfaction, the mock-up shall serve as the standard of quality for the Work.

C. All mock-ups, at the Owner's option, shall remain the property of the Owner. If not required by the Owner, Contractor shall remove and dispose of the mock-up.

D. Where indicated, on-site mock-ups, if accepted, may be integrated into the Work.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 42 00
REFERENCES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Definitions.

B. Specification format and content.

C. Industry standards.

D. Codes and standards.

E. Governing regulations/authorities.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the General Conditions.

B. Regulations: Includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

1.3 SPECIFICATION FORMAT AND CONTENT

A. Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's most current format.

B. The Sections are placed in the Project Manual in numeric sequence; however, this sequence is not complete and the Table of Contents of the Specifications must be consulted to determine the total listing of Sections.

C. The Section title is not intended to limit the meaning or content of the Section, nor to be fully descriptive of the requirements specified therein.

D. The organization of the Specifications shall not control the division of the Work among subcontractors or establish the extent of Work to be performed by any trade.

E. Specifications use certain conventions regarding style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are:

1. Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural, and plural words interpreted as singular, where applicable to maintain the context of the Contract Document indicated.

2. Imperative and streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. Subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

3. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

4. The words "Contractor shall" are implied wherever a sentence or phrase begins without a clear subject (e.g., "Transmit each submittal…" means "Contractor shall transmit each submittal…") and the requirement is not clearly that of Owner Architect, Construction Manager, Project Inspector, or other agent and/or representative.

1.4 INDUSTRY STANDARDS

A. Except where Contract Documents include more stringent requirements, applicable construction industry standards shall apply as if bound into the Contract Documents to the extent referenced. Such standards are made part of Contract Documents by reference.

B. Conform to reference standard by date of issue current on date for receiving bids [or date of Owner Contractor Agreement when there are no Bids] except when a specific date is indicated.

C. Where compliance with two or more standards is specified and where standards may establish different or conflicting requirements for quantities or quality levels, the more stringent, higher quality and greater quantity of Work shall apply.

D. The quantity or quality level shown or specified shall be the minimum provided or performed. Indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements.

E. Each entity engaged in construction of the Work is required to be familiar with industry standards applicable to its construction activity.

F. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required activity, Contractor shall obtain copies directly from publication source.

G. Trade association names and titles of general standards are frequently abbreviated. Where such abbreviations are used in the Specifications or other Contract Documents, they shall mean the recognized trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the content of the text provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.

H. Refer to individual Specification Sections and related Drawings for names and abbreviations of trade associations and standards applicable to specific portions of the Work. In particular, refer to Division 15 for names and abbreviations applicable to mechanical Work, and refer to Division 16 for names and abbreviations applicable to electrical Work.

I. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.5 CODES AND STANDARDS

A. Latest edition of pertaining ordinances, laws, rules, codes, regulations, standards, and others of public agencies having jurisdiction of the Work are intended wherever reference is made in either the singular or plural to Code or Building Code except as otherwise specified, including but not limited to the latest edition of those in the following listing.
B. Refer to Construction Documents, Sheet A0.01 for Applicable Codes.

1.6 GOVERNING REGULATIONS/AUTHORITIES

A. Authorities having jurisdiction have been contacted where necessary to obtain information for preparation of Contract Documents. Contact authorities having jurisdiction directly for information having a bearing on the Work.

B. Comply with all federal, state and local laws, ordinances, rules and regulations indicated and which bear on the conduct of the Work.

PART- 2 PRODUCTS

Not used

PART- 3 EXECUTION

Not used

END OF SECTION

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SECTION 01 45 00
QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Quality assurance and control of installation.

B. Tolerances.

C. Field samples.

D. Mock-up.

E. Manufacturers' field services and reports.

F. Observation and supervision.

1.2 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Project Engineer before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce workmanship of specified quality.

F. Comply with journeyman/apprentice ratios as applicable and as required by the County's findings.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.3 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturer's tolerances. Should manufacturer's tolerance conflict with Contract Documents, request clarification from Project Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

D. No tolerances related to disabled access requirements allowed or accepted beyond the tolerances defined in Chapter 11B of the current California Building Code.

1.4 FIELD SAMPLES

A. Install field samples at the site as required by individual Specifications Sections for review.

B. Acceptable samples represent a quality level for the Work.

C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Architect of Record.

1.5 MOCK-UP

A. Tests will be performed under provisions identified in this Section and identified in the respective product Specification Sections.

B. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals and finishes.

C. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Architect of Record.

1.6 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. Provide if individual Specification Sections require material or product suppliers or manufacturers to provide qualified staff personnel to observe the tests and/or mock-up as applicable, and initiate corrective instructions when necessary.

B. Individuals shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

C. Submit report in duplicate within 15 days of observation to Project Architect for review.

1.7 OBSERVATION AND SUPERVISION

A. The County and Architect of Record or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Project Engineer and any consulting structural engineer will be in accordance with applicable regulations, including, without limitation, CCR, Title 24.

B. One or more Project Inspector(s) appointed by the City or in contract with the County, referred to hereinafter as the “Project Inspector”, will observe the Work in accordance with CCR, Title 24 regulations:

1. The Project Inspector shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections. The Contractor shall provide facilities and access as required and shall provide assistance for sampling or measuring materials.

2. The Project Inspector will notify the County and Architect of Record and call the attention of the Contractor to any observed failure of Work or material to conform the Contract Documents.

3. The Project Inspector shall observe and monitor all testing and inspection activities required.

C. The Contract shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Title 24. The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor’s superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by CCR, Title 24.

1.8 TESTING AGENCIES

A. Testing agencies and tests shall be in conformance with the General Documents and the requirements of CCR, Title 24.

B. Testing and inspection in connection with earthwork shall be under the direction of the County’s consulting civil engineer.

C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, refereed to hereinafter as the “Testing Laboratory”. The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the County.

1.9 TESTS AND INSPECTIONS

A. The Contractor shall be responsible for notifying the County and Project Inspector of all required tests and inspections. Contractor shall notify the County and Project Inspector forty-eight (48) hours in advance of performing any Work requiring testing or inspection.

B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.

C. The County will pay for the first inspections and tests required by the "CCR", and other inspections or tests that the County and/or the Project Architect may direct to have made, including but not limited to the following principal items:

1. Tests and observations for earthwork and paving.

2. Tests for concrete mix designs, including tests of trial batches.

3. Tests and inspections for structural steel Work.

4. Additional tests directed by the County that establish that materials and installation comply with the Contract Documents.

5. Test and observation of welding and expansion anchors.

D. The County may, at its discretion, pay and back charge the Contractor for:

1. Retests or re-inspections, if required, and tests or inspections required due to Contractor error or lack of required identifications of material.

2. Uncovering of Work in accordance with Contract Documents.

3. Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime position.

4. Testing done off site.

E. Testing and inspection reports and certifications.

1. If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.

a. The County.

b. The Construction Manager, if any.

c. Architect of Record

d. The Consulting Engineer, if any.

e. Other Engineers on the Project, as appropriate.

f. The Project Inspector.

g. The Contractor.

2. When the test or inspection is one required by the CCR, a copy of the report shall be provided as requested by the Project Inspector and/or Architect of Record.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual Specification Sections.

D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Selection and payment.

B. Contractor submittals.

C. Laboratory responsibilities.

D. Laboratory reports.

E. Limits on testing laboratory authority.

F. Contractor responsibilities.

G. Schedule of inspections and tests.

1.2 REFERENCES

A. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

B. ASTM E329 - Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

C. CBC - California Building Code.

D. Title 24, Part 2, of the California Code of Regulations.

1.3 OBSERVATIONS AND SUPERVISION

A. The Owner and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting structural engineer will be in accordance with applicable regulations, including, without limitation, CCR, Part 1, Title 24, Section 7-141.

B. One or more Project Inspector(s) employed by or in contract with the Owner, referred to hereinafter as the "Project Inspector", will observe the work in accordance with CCR, Part 1, Title 24, Section 7-144(a)(b)(c), 7-145(a):

1. The Project Inspector shall have access to the tests wherever it is in preparation or progress for ascertaining that the tests is in accordance with the Contract Documents and all applicable code sections. The Contractor shall provide facilities and access as required and shall provide assistance for sampling or measuring materials.

2. The Project Inspector will notify the Owner and Architect and call the attention of the Contractor to any observed failure of tests or material to conform to Contract Documents.

3. The Project Inspector shall observe and monitor all testing and inspection activities required.

C. The Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Part 1, Title 24, Section 7-143. The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor's superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by Part 1, Title 24, Section 7-151.

1.4 TESTING AGENCIES

A. Testing agencies and tests shall be in conformance with the Contract Documents and the requirements of Part 1, Title 24, Section 7-149.

B. Testing and inspection in connection with earthwork shall be under the direction of the Owner’s consulting soils engineer, if any, referred to hereinafter as the "Soils Engineer."

C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory." The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the Owner.

1.5 TESTS AND INSPECTIONS

A. The Contractor shall be responsible for notifying the Owner and Project Inspector of all required tests and inspections. Contractor shall notify the Owner and Project

Inspector forty-eight (48) hours in advance of performing any Work requiring testing or inspection.

B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.

C. The Owner will pay for first inspections and tests required by the "CCRs", and other inspections or tests that the Owner and/or the Architect may direct to have made, including, but not limited to, the following principal items:

1. Tests and observations for earthwork and paving.
2. Tests for concrete mix designs, including tests of trial batches.
3. Tests and inspections for structural steel capitalize Work.
4. Field tests for framing lumber moisture content.
5. Additional tests directed by the Owner that establish that materials and installation comply with the Contract Documents.
6. Test and observation of welding and expansion anchors.
7. Factory observation of components and assembly of modular prefabrication structures and buildings.

D. The Owner may, at its discretion, pay and back charge the Contractor for:

1. Retests or reinspections, if required, and tests or inspection required due to test failures Contractor error or lack of required identifications of material.
2. Uncovering of Work in accordance with Contract Documents.
3. Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime portion.
4. Testing done off site.

E. Testing and inspection reports and certifications:

1. If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.
    a. The Owner.
    b. The Construction Manager, if any.
    c. The Architect.

d. The Consulting Engineer, if any.

e. Other Engineers on the Project, as appropriate.

f. The Project Inspector.

g. The Contractor.

2. When the test or inspection is one required by the CCR, a copy of the report shall also be provided to the local jurisdiction.

1.6 SELECTION AND PAYMENT

A. Owner will employ and pay for services of an independent testing laboratory to perform specified inspection and testing as specified by Owner's testing laboratory.

B. Owner's employment of testing laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

1.7 OWNER'S TESTING LABORATORY RESPONSIBILITIES

A. Test samples of mixes submitted by Inspector.

B. Provide qualified personnel at site. Cooperate with Architect and Contractor in 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 Architect and Contractor of observed irregularities or non-conformance of Work or products.

F. Perform additional inspections and tests required by Architect.

G. Attend preconstruction conferences and progress meetings when requested by Architect.

1.8 LABORATORY REPORTS

A. After each inspection and test, Owner shall then submit one copy of laboratory report to Contractor. Laboratory shall submit copies of the report per the requirements of Section 01300, Submittals. Reports of test results of materials and inspections found

not to be in compliance with the requirements of the Contract Documents shall be forwarded immediately.

B. Verification of Test Reports: Each testing agency shall submit in accordance with Section 01300 Submittals, a verified report covering all of the tests which were required to be made by that agency during the progress of the project. Such report shall be furnished each time that Work on the Project is suspended, covering the tests up to that time and at the completion of the Project, covering all tests.

1.9 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.

C. Laboratory may not assume any duties of Contractor.

D. Laboratory has no authority to stop the Work.

1.10 CONTRACTOR RESPONSIBILITIES

A. Submit proposed items for testing as required herein and/or as defined in Section 011400 to Architect for review in accordance with applicable Specifications.

B. Cooperate with laboratory personnel, and provide access to the Work and to manufacturer's facilities.

C. Notify Architect, Owner's Representative, and testing laboratory 48 hours prior to expected time for operations requiring inspection and testing services.

1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to the Contractor's negligence.

2. The Contractor shall notify the Owner's representative a sufficient time in advance of the manufacture of material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the Owner may arrange for the testing of same at the source of supply.

3. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.

D. Employ and pay for services of Owner's testing laboratory to perform additional inspections, sampling and testing required when initial tests indicate Contractor's Work and/or materials does not comply with Contract Documents.

1.11 SCHEDULE OF INSPECTIONS AND TESTS BY OWNER'S TESTING LABORATORY

A. The testing agency shall perform tests and inspections per the local jursidiction approved “Tests and Inspections” list as well as for the following in conformance with the (CBC) California Building Code, Title 24, Part 2, of the California Code of Regulations.

1. General Requirements (Chapter 17A):

a. Special Inspections - 1701A.

b. Nondestructive Testing - 1704A.

c. Prefabricated Construction -1704A.

2. Foundations (Chapter 18A and 33):

a. Earth fill compaction - 3304.1.

3. Concrete (Chapter 19A):

a. Materials:

(1) Portland Cement Tests - 1903A.2.

(2) Concrete Aggregates - 1903A.5.

(3) Reinforcing Bars - 1903A.8, 1929A.2.

(4) Prestressing Steel & Anchorage - 19010A.5, 1910A.3.

(5) Waiver of Batch Plant Inspection and Tests - 1929A.5.

b. Concrete Quality:

(1) Proportions of Concrete - 1904A.1, 1904A.2, 1904A.3, 1904A.4, 1905A.1, 1905A.2, 1905A.3, 1905A.4, 1905A.5.

(2) Strength Tests of Concrete - 1905A.6.

(3) Splitting Tensile Tests - 1905A.1.4.

(4) Composition Construction Cores - 1929A.8.

c. Concrete Inspection:

(1) Job Site Inspection - 1905A.6, 1905A.7.

(2) Batch Plant or Weighmaster Inspection - 1929A.4.

(3) Reinforcing Bar Welding Inspection - 1929A.12.

d. Anchors in Concrete:

(1) Drilled-In-Expansion Bolts or Epoxy-Type Anchors in Concrete - 1923A.3.5.

4. Masonry (Chapter 21A):

a. Materials:

(1) Masonry Units - 2102A.2, 4., 5., 6.

(2) Portland Cement - 2102A.2,2.

(3) Mortar & Grout Aggregates - 2102A.2, 1, 2103A.3, 2103A.4.

(4) Reinforcing Bars - 2102A.2, 10. 1903A.5, 1929A.2.

b. Masonry Quality:

(1) Portland Cement Tests - 1903A.2, 1929A.1.

(2) Mortar & Grout Tests - 2105A.3.4, 2.

(3) Masonry Prism Tests - 2105A.3.2, 2105A.3.3, 2105A.3.4, 2105A.3.5.

(4) Masonry Core Tests -2105A.3.1.

(5) Masonry Unit Tests - 2105A.3.4,1.

(6) Reinforcing Bar Tests - 1929A.2.

c. Masonry Inspection:

(1) Reinforced Masonry - 2115A, 2105A.7.

(2) Reinforcing Bar Welding Inspection - 1929A.12.

5. Structural Steel (Chapter 22A):

   a. Materials:

      (1) Structural Steel - 2203A.2, 2231A.1.

      (2) Material Identification - 2203A.

   b. Inspection and Tests of Structural Steel:

      (1) Tests of Structural & Cold Formed Steel - 2231A.1.

      (2) Tests of H.S. Bolts, Nuts, Washers - 2231A.2.

      (3) Tests of End Welded Studs - 2231A.3.

      (4) Shop Fabrication Inspection - 2231A.4.

      (5) High Strength Bolt Inspection - 2231A.6.

      (6) Welding Inspection - 2231A.5.

      (7) Nelson Stud Welding - 2231A.3.

      (8) Non-destructive Weld Testing - 1703A.

6. Wood (Chapter 23):

   a. Materials:

      (1) Lumber and Plywood Grading - 2304.

      (2) Glued-Laminated Members - 2304.

   b. Wood Inspection:

      (1) Timber Connectors - 2337.2.

      (2) Truss Joists - 2337.3.

      (3) Plate Connected Wood Trusses - 2337.3.

(4) Glu-Laminated Fabrication - 2337.1.

7. Veneer (Chapter 14):

a. Materials:

(1) Masonry Units - 1403.3, 2102A.

(2) Precast Concrete Units - 1403.3, 1916A.

(3) Mortar and Grout - 2103A.3, 2103A.4.

(4) Bond and Shear Tests - 1403.5.6.

8. Roof Covering (Chapter 15):

a. Materials:

(1) Roof Tile Tests - 1507.7.1.

9. Aluminum (Chapter 20A):

a. Materials:

(1) Alloys - 2001A.2.

(2) Identification - 2001A.4.

b. Inspection.

(1) Welding - 2004A.8.

B. Plumbing: Testing as specified in Division 15 including, but not limited to: sterilization, soil waste and vent, water piping, source of water, pressure, gas piping, downspouts and storm drains.

C. Automatic Fire Sprinklers (where applicable): Testing as specified in Division 15 shall include, but not be limited to, hydrostatic pressure.

D. Heating, Ventilating and Air Conditioning: Testing as specified in Division 15 shall include, but not be limited to: Ductwork tests, cooling tower tests, boiler tests, controls testing, piping tests, water and air systems, and test and balance of heating and air conditioning systems.

E. Electrical: Testing as specified in Division 16, including, but not limited to, equipment testing, all electrical system operations, grounding system and checking insulation after cable is pulled.

1.12 PROJECT INSPECTOR'S ACCESS TO SITE

A. A Project Inspector in accordance with the requirement of the local jurisdiction and the State of California Code of Regulations Title 24, Part 1 will be assigned to the Work. His duties are specifically defined in Section 7-145(a), and as indicated in the General Conditions.

B. The Owner and the Construction Manager shall at all times have access for the purpose of inspection to all parts of the Work and to the shops wherein the Work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

C. The Work of construction in all stages of progress shall be subject to the personal continuous observation of the Project Inspector. He shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Project Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the Work and the character of the materials. Inspection of the Work shall not relieve the Contractor from any obligation to fulfill this Contract. The presence of a Project Inspector shall in no way change, mitigate or alleviate the responsibility of the Contractor.

D. The Project Inspector is not authorized to change, revoke, alter, enlarge or decrease in any way any requirement of the Contract Documents, Drawings, Specifications or subsequent Change Orders.

E. Whenever there is insufficient evidence of compliance with any of the provisions of Title 24, Part 2 of the California Code of Regulations or evidence that any material or construction does not conform to the requirements of Title 24, Part 2 of the California Code of Regulations, the local jurisdiction may require tests as proof of compliance. Test methods shall be as specified herein or by other recognized and accepted test methods determined by the local authorities. All tests shall be performed by a testing laboratory accepted by local jurisdiction.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 60 00
MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Transportation and handling.

C. Storage and protection.

D. Damage and restoration.

1.2 PRODUCTS

A. Products: New material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components if designated for reuse.

B. Provide interchangeable components of the same manufacturer, for similar components.

C. Provide products that comply with the Contract Documents, that are undamaged and are unused at the time of installation.

D. Provide products complete with all accessories, trim, finish, safety guards and other devices and detail needed for a complete installation and for the intended use and effect.

E. Where products are specified by name or by manufacturer provide the product or manufacturer specified. No substitutions will be permitted unless made under the provisions of **Section 01630.**

F. Where Specifications only describe a product or assembly by listing exact characteristics required, provide a product or assembly that provides the characteristics.

G. Where Specifications only require compliance with performance requirements, provide products that comply with those requirements.

H. Where the Specifications only require compliance with an imposed code, standard or regulation, provide a product that complies with the standards, codes or regulations specified.

I. Where Specifications require review and acceptance of a Sample, the Architect's decision will be final on whether a proposed product Sample is acceptable or not.

J. Do not use materials and equipment removed from existing premises, unless as specifically directed.

1.3 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's instructions.

B. Schedule delivery to minimize long-term storage at site to prevent overcrowding of construction spaces.

C. Coordinate production and delivery of Owner-furnished items (OFCI), where applicable.

D. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

E. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged. Notify Architect of Record of any items received under County (Owner) purchase, if applicable.

F. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 STORAGE

A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Provide off-site storage when site does not permit on-site storage.

D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

E. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

H. Prevent the discharge of pollutants to storm water from storage of materials on-site using best management practice techniques defined in Chapter 4 of the Construction Activity Handbook published by the Storm Water Quality Task Force.

1.5 PROTECTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to minimize damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.6 DAMAGE AND RESTORATIONS

A. Damage to existing or new Work, whether accidental or not, shall be restored or replaced as specified or directed by Architect of Record.

B. Restoration shall be equal to structural performance of original Work.

C. Finish shall match appearance of existing adjacent Work.

D. Work not properly restored or where not capable of being restored shall be removed and replaced.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 74 00
CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cleaning at completion of the Work.

B. Interior dust control.

1.2 QUALITY CONTROL

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and antipollution laws.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use only those cleaning materials which will neither create hazards to health or property nor damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 INTERIOR DUST CONTROL

A. Clean interior spaces prior to the start of finish painting, and continue cleaning on an as-needed basis until painting is finished.

B. Schedule operations so that no dust and other contaminants resulting from cleaning process will fall on wet or newly coated surfaces.

3.2 FINAL CLEANING

A. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces, including fixtures, equipment, etc.

B. All scars, stains, paint marks, tags, and labels (except required labels) shall be removed. Paint work and equipment shall be cleaned and touched up as required.

C. Clean and polish hardware and light fixtures.

D. Glass, both interior and exterior, and mirrors shall be cleaned by a professional window washer.

E. Ventilating Systems: Clean permanent filters, and replace disposable filters if units have been operated during construction.

F. Broom-clean and wash down exterior paved surfaces.

G. Vacuum-clean all floors. Carpeting shall be vacuumed and professionally cleaned, if required, to remove soil and visible stains.

H. Clean interior and exterior surfaces of all casework.

I. Immediately prior to final completion or County occupancy, conduct an inspection of sight-exposed interior and exterior surfaces, equipment, fixtures, etc., and all work areas to verify that the entire Work is clean.

J. Clean, strip, and seal all flooring products per manufacturer's specifications and requirements prior to installation of furniture and equipment.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Adjusting.

D. Demonstration and Instructions.

E. Project Record Documents.

F. Operation and maintenance data.

G. Warranties.

H. Spare parts and maintenance materials.

1.2 CLOSEOUT PROCEDURES

A. Request Architect's observation of rough-ins when walls and ceilings are still open for observation. Give Architect at least 48 hours notice. Architect will prepare punch list of unsatisfactory Work.

B. When Work is substantially complete, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is substantially complete in accordance with Contract Documents and ready for Architect's inspection. Certificate shall include evidence that equipment and systems have been tested in the presence of the Architect and manufacturer's representatives, where applicable. Substantial Completion shall be defined as 95 percent completion of all Work, including 100 percent completion of the following: air balance report and submittal, final testing of fire alarm by Local Fire Inspector/Consultant/Owner's Representative, mechanical utility commissioning with Owner's Representative, final electrical testing by IOR/testing laboratory, all finishes, painting (except touch-up), cleaning of Project area (including window washing).

C. Provide submittals to Architect that are required by governing or other authorities.

D. Punch List:

1. Contractor shall correct all punch list items within twenty days of delivery of the punch list, but no later than the final completion date.

2. Prior to submission of its request for final payment, Contractor shall certify that a

completed set of Project Record Documents has been submitted to the Architect for final review.

E. Final Inspection:

1. Within seven days after notice by the Contractor of completion of punch list work, the Architect will conduct the final inspection with the Owner and the Contractor.

2. Items found not resolved may be cause for back charge of additional time for Architect to re-visit the site for final verification.

F. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

G. Submit affidavit of payment of debts and claims, AIA Document G706.

H. Submit affidavit of release of liens, AIA Document G706A.

I. Submit consent of Contractor's surety to final payment, AIA Document G707.

1.3 REINSPECTION FEES

A. Architect (and his consultants, if required) will perform 1 observation of rough-ins, and 1 observation of Work that is substantially complete. When punch list items have been completed, Architect will observe to verify.

B. Should the Architect and his Consultants have to perform re-inspections and punch list due to failure of the Work to comply with the status of completion claimed by the Contractor; Owner will deduct the amount of compensation for such re-inspections and punch lists from the final payment to the Contractor.

1.4 FINAL ADJUSMENT OF ACCOUNTS

A. Submit a final statement of accounting to the Architect.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and Deductions Resulting From:

a. Previous Change Orders.

b. Deductions for uncorrected Work.

c. Penalties and bonuses.

d. Deductions for liquidated damages.

e. Deductions for re-inspection payment.

f. Other adjustments.

3. Total Contract Sum, as adjusted.

4. Previous payments.

5. Sum Remaining Due: Architect will prepare a final Change Order, reflecting approved adjustments to the Contract Sum, which were not previously made by Change Order.

1.5 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions.

1.6 RELATED REQUIREMENTS

A. As a condition precedent to final acceptance of the Project, the Contractor shall provide spare/loose parts, maintenance materials and operation manuals as required by various Sections of the Specifications.

1. Parts and materials shall be packaged so as to preclude damage in normal handling and storage.

2. Packages shall be labeled with full description of contents and Project name.

3. Place packaged parts and materials at location directed by Owner's representative.

4. Maintenance and Operation Manuals: Provide permanent quality manual of maintenance and operation for all materials requiring operation or for which manufacturer, supplier, or installer recommend maintenance (i.e., floor coverings, roofing, operating mechanisms, electrical devices, paint, etc.). Manuals shall contain manufacturer's instructions and recommendations for proper operation and maintenance. Where applicable, include parts list, sources of parts, service and program for frequency of maintenance. Five sets required, bound in 3-ring binders, shall be provided by Contractor.

5. Prior to turning over any operations manuals or spare/loose parts, accompanied by a CD-ROM or flash drive, Contractor shall submit for approval and, upon approval, shall maintain a master log of required manuals and parts, including description, Specification reference, responsibility designation, anticipated and actual delivery dates, delivery acknowledgement, etc.

B. The General Conditions cover the Contractor's responsibility to remedy defects due to faulty workmanship and materials which appear within one year from the date of recording of the Notice of Acceptance.

C. Special warranties are required by various Sections of the Specifications. Assemble written warranties, label and submit to the Architect for review and transmittal to the Owner.

1. Equipment warranties shall be written in the manufacturer's standard form and shall be countersigned by the subcontractor or supplier and the Contractor.

2. All other warranties shall be written on the subcontractor's or supplier's letterhead and shall be countersigned by the Contractor.

3. Bind warranties and bonds in heavy-duty five sets of commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 inch by 11 inch paper. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name and the name of the Contractor. The CD-ROM or flash drive shall be included in the binder side pocket.

4. When operating and maintenance manuals are required for warranted construction, provide additional copies of each warranty, as necessary, for inclusion in each required manual.

1.7 FINAL CLEANING

A. Execute final cleaning prior to final inspection. Work includes sweeping, brushing, and other general cleaning of completed Work and removal of debris, surplus material, and tools not in active use, scaffolding and other equipment no longer needed.

B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

H. Refer to Section 01 74 00 for additional requirements.

1.8 FIRE PROTECTION

A. Store volatile/hazardous waste in covered metal containers and remove from premises daily in a manner which complies with all ordinances, regulations, and laws regarding hazardous materials.

1.9 POLLUTION CONTROL

A. Conduct clean-up and disposal operations to comply with codes, ordinances regulations, and anti-pollution laws.

1.10 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.11 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.12 PROJECT RECORD DOCUMENTS

A. Maintain on site, one set of the following Record Documents; record actual revisions to the Work in contrasting color.

1. Contract Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other Modifications to the Contract.

5. Reviewed Shop Drawings, Product Data, and Samples.

B. Store Record Documents separate from documents used for construction, in a clean, dry environment and maintain sets in good order.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each Section in contrasting color ink, description of actual products installed, including the following:

1. Manufacturer's name and product model and number.

2. Changes made by Addenda and Modifications.

E. Contract Drawings and Shop Drawings: Legibly mark each item in contrasting color ink to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

3. Field changes of dimension and detail, identified by RFI or Change Order.

4. Details not on original Contract Drawings.

F. After final inspection is requested, Contractor shall submit Record Documents with digital scan copy in PDF to the Architect for review. Contractor shall make such revisions or corrections as may be necessary for the Drawings and Specifications to be a true, complete, and accurate record of the Work.

1. Accompany submittal with transmittal in duplicate, containing:

a. Date.

b. Project title and number.

c. Contractor's name and address.

d. Title and number of each Record Document.

e. Signature of Contractor or his authorized representative.

G. Submit documents to Architect for final Application for Payment. Inadequate or incomplete Record Documents may be used as cause for withholding payment.

1.13 RECORD DRAWINGS

A. Architect will provide Contractor with one set of reproducible sepia plans of the original Contract Drawings.

B. Contractor shall maintain one set of marked-up prints kept at each job-site and updated each month, or as otherwise agreed, shall transfer changes and information indicated on the marked-up blue line prints to the reproducible drawings. Contractor shall submit to the Architect one set of blue line prints showing all changes incorporated into the Work since the preceding monthly submittal. The Record Drawings shall be available at the Project Site.

C. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.

D. Deviations in construction, especially pipe and conduit locations and deviations caused by Change Orders, Field Clarifications, Requests for Clarification and Addenda shall be accurately and legibly recorded.

E. Locations and changes shall be done in a neat, legible manner and, where applicable, indicated by drawing a "cloud" around the changed or addition information.

1.14 RECORD DRAWING INFORMATION

A. Record the following information:

1. Locations of Work buried under or outside each building, such as plumbing and electrical lines and conduits.

2. Actual numbering of each electrical circuit.

3. Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract.

4. Locations of all items, not necessarily concealed, which vary from the Contract Documents.

5. Installed location of all cathodic protection anodes.

6. Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.

7. Locations of underground Work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stub-outs, invert elevations, etc.

8. Sufficient information to locate Work concealed in each building with reasonable ease and accuracy. In some instances, this may be by dimension, in others; it may be in relation to the spaces in the building near which it was installed.

1.15 OPERATION AND MAINTENANCE DATA

A. Provide Data For:

1. Fire alarm system.

2. Mechanical equipment and controls.

3. Energy management system.

4. Electrical system.

5. Security and communication systems.

B. Submit prior to final inspection, bound in 8-1/2 inch x 11 inch text pages, three-ring, D-size binders with durable vinyl covers plus one CD-ROM for all equipment in the above categories.

C. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of Project, and subject matter of binder when multiple binders are required.

D. Internally subdivide the binder contents using permanent page dividers with laminated plastic tabs, logically organized in Parts as described below.

E. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, engineers, Contractor, subcontractors, and major equipment suppliers.

F. Part 2: Operation and maintenance instructions, arranged by Specification Section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:

1. Significant design criteria.
2. List of equipment.
3. Parts list for each component.
4. Operating instructions.
5. Maintenance instructions for equipment and systems.
6. Maintenance instructions for finishes, including recommended cleaning methods and materials.

G. Part 3: Project documents and certificates, including the following:

1. Shop Drawings and Product Data.
2. Air and water balance reports.
3. Certificates.
4. Photocopies of warranties.

1.16 WARRANTIES

A. Provide duplicate notarized copies.

B. Execute and assemble documents from subcontractors, suppliers, and manufacturers, including items furnished by Owner.

C. Provide Table of Contents and assemble in binder with durable plastic cover.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

F. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of warranty on the Work that incorporates the products.

G. Manufacturer's letter of intent to furnish products and services beyond the warranty period where indicated.

H. Manufacturer's disclaimer and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with Contractor.

I. When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

J. When Work covered by warranty has failed and has been corrected, reinstate warranty by written endorsement. Reinstated warranty shall be equal to original warranty with equitable adjustment for depreciation.

K. Upon determination that Work covered by warranty has failed, replace or repair Work to an acceptable condition complying with requirements of the Contract Documents.

1.17 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.

B. Deliver to Project Site and place in location as directed.

C. Obtain signed receipt for delivery of materials and submit prior to application for final payment.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

A. Use only those cleaning materials which will not create disruptive fumes or hazards to health or property and which will not damage surfaces.

B. Use only cleaning materials and methods recommended by manufacturer of surface to be cleaned and by cleaning agent material manufacturer. Repair or replace surfaces damaged due to use of improper cleaners and techniques.

PART 3 - EXECUTION

3.1 CLEAN-UP DURING CONSTRUCTION

A. Execute daily cleaning to keep Work, site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris, and rubbish.

C. Remove waste materials, debris and rubbish from the site daily or dispose of in approved container on-site.

3.2 DUST CONTROL

A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces

C. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for acceptance and occupancy.

D. Lower waste materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

E. Conform to City, County, and State dust control regulations.

3.3 GENERAL CLEANING REQUIRMENTS

A. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

B. Wash and shine glazing mirrors.

C. Polish glossy surfaces to a clear shine.

D. Clean glass; remove labels, fingerprints, grease, dirt stains, spots, marks, and other foreign materials from exposed exterior and interior surfaces.

E. Clean hardware, plumbing fixtures, and chrome and storefront systems; remove paint spots, asphalt and smears from surfaces; clean fixtures and wash concrete and tile floors.

F. Comply with all special cleaning, waxing and finishing instructions contained in Contract Documents.

G. Restore existing improvements, inside or outside property, which were disturbed, damaged or destroyed as a result of Work under this Contract.

H. Restore and replace damaged material conforming to original colors, textures, lines, grades, shapes and kind, except as otherwise required. Labor, material and methods used in restoring improvements shall conform to directions obtained from Architect before commencing Work.

3.4 FINAL CLEANING

A. Use experienced workmen and professional cleaners for final cleaning.

B. Legally dispose of waste materials, debris and rubbish off the site.

C. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from exposed and semi-exposed surfaces.

D. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.

E. Vacuum clean all interior spaces including inside cabinets. Broom clean paved surfaces. Rake clean other surfaces of grounds.

F. Broom and water clean paved surfaces and walks. Rake clean other surfaces and grounds.

G. Maintain cleaning until building or portion thereof, is accepted and occupied by Owner.

H. At completion of construction and just prior to final acceptance or occupancy, conduct final inspection exposed interior and exterior surfaces.

3.5 VENTILATING SYSTEM CLEANING

A. Clean permanent filters and replace disposable filters if units were operated during construction.

B. Clean ducts, blowers and coils if units were operated during construction.

END OF SECTION

SECTION 01 78 36

WARRANTIES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for Project warranties and guarantees.

1.2 DEFINITIONS

A. Standard Product Warranties: Preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties: Written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.3 GENERAL REQUIREMENTS

A. Guarantees between Contractor and manufacturers and between Contractor and suppliers shall not affect warranties between Contractor and Owner.

B. Contractor shall not be held responsible for defects due to misuse, negligence, willful damage, improper maintenance, or accident caused by others nor shall he be responsible for defective parts whose replacement is necessitated by failure of Owner's maintenance forces properly to clean and service them, provided that Contractor has furnished complete operating and maintenance instructions to Owner.

C. In addition to other requirements specified:

1. Compile specified service and maintenance contracts.

2. Coexecute submittals when so specified.

3. Review submittals to verify compliance with Contract Documents.

4. Submit to Architect for review and transmittal to Owner.

D. In case of items remaining uncompleted after date of Substantial Completion, the warranty period shall run from the date of acceptance of such items.

E. Special warranties applicable to definite parts of the Work and as specifically stipulated in the separate Sections of the Specifications or other Contract Documents shall be subject to the terms of this Section during the first year of the life of such warranty.

F. If repairs or changes are required in connection with the warranted Work within any warranty period, the Contractor shall, promptly upon receipt of notice from the Owner or Architect and without expense to the Owner, comply with the following:

1. Place in satisfactory condition, in every particular, all of such warranted Work, and correct all defects therein.

2. Make good damage to the buildings or site which is the result of the cause for said repairs and changes.

3. Make good any Work, including the equipment and contents of said buildings or site, disturbed in fulfilling any such warranty.

G. The Owner may, at its sole discretion, after the Contractor has received seven days' written notice, repair or cause to be repaired special equipment which has been furnished and installed and which may be damaged and the repair of which is included in the provision of any warranty.

1. However, where special equipment is involved which, because of its inherent nature, may suffer further damage or cause loss to the Owner owing to the 7-day delay, the Owner may, after notice, cause such equipment to be repaired.

2. The cost of such repairs shall be recoverable from the Contractor to the amount of the cost to the Owner for the completion of such repairs and the reconditioning of the equipment to its exact state prior to damage.

H. If repairs or changes are required in connection with warranted Work within any warranty period and notice thereof is given within such period, the warranty shall continue as to Work requiring repair or change until the things herein required to be done are completed, and the termination of the warranty period shall not apply thereto.

I. In case of Work performed by subcontractors and where special warranties are required, warranties addressed to and in favor of the Owner shall be secured from said subcontractors.

J. No provision in the Contract Documents nor in any special or general warranty shall be held to limit, as to time or scope of liability, the Contractor's liability for defects or the liability of his sureties to less than the legal limit of liability under laws having jurisdiction.

K. The delivery of any warranties shall not relieve the Contractor from any obligation assumed under any other provision of the Contract Documents.

L. The obligation of the Contractor under this Section shall survive the termination of the Contract.

1.4 FORM OF WARRANTY

A. Submit the following written warranty for special warranties and warranties in excess of one year, typed on subcontractor's letterhead, when required by a Specification Section:

(The Remainder of this Page is Blank)

WRITTEN WARRANTY FOR

_____

We hereby warrant that _____

which we have provided in _____ has been completed in accordance with Specification Section _____ and Contract Documents requirements.

We agree to repair or replace any or all of our Work, together with any other adjacent Work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or materials within the period of time prescribed by law or latently defective in its workmanship or materials within a period of _____ year(s) from date established in the Certificate of Substantial Completion of above-named structure, ordinary wear and tear and unusual abuse or neglect excepted.

We also agree to repair any and all damages resulting from such defects.

In the event of our failure to comply with above-mentioned conditions within a reasonable time but in no case longer than 7 calendar days after being notified in writing by the Owner we collectively and separately do hereby authorize the Owner to have said defective Work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.

SIGNED _____
(Subcontractor's name, address, license number, and date of signing)

COUNTERSIGNED _____
(Contractor's name, address, license number, and date of signing)

1.5 SUBMITTAL REQUIREMENTS

A. Assemble warranties, bonds, and service and maintenance contracts executed by each of the respective manufacturers, suppliers, and subcontractors.

B. Number of Original Signed Copies Required: Two each.

C. Contents:

1. Neatly typed, in orderly sequence.

2. Provide complete information for each item including:

a. Product or Work item.

b. Firm name with name of principal, address, and telephone number.

c. Scope.

d. Date of beginning of warranty, bond, or service and maintenance contract.

e. Duration of warranty, bond, or service and maintenance contract.

3. Provide the following information for Owner's personnel:

a. Proper procedure in case of failure.

b. Circumstances which might affect the validity of warranty or bond.

4. Contractor's name, name of responsible principal, address, and telephone number.

1.6 FORM OF SUBMITTAL

A. Prepare in duplicate packets.

B. Format:

1. Size: 8-1/2-inch-x-11-inch sheets punched for three-ring binder. Fold larger sheets to fit into binders.

2. Cover: Identify each packet with typed or printed title, "WARRANTIES" and list the title of Project and name of Contractor.

C. Binders: Commercial quality, three ring, "View" type, with durable and cleanable plastic covers.

1.7 TIME OF SUBMITTALS

A. Within 30 days after date of Substantial Completion, prior to final request for payment.

B. For items of Work, where acceptance is delayed materially beyond the date of Substantial Completion, provide updated submittal within 30 days after acceptance listing the date of acceptance as the start of the warranty period.

1.8 SUBMITTALS REQUIRED

A. Submit special warranties, bonds, and service and maintenance contracts specified in the individual Sections.

PART 2 – PRODUCTS

Not used

PART 3 – EXECUTION

Not used

END OF SECTION

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SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Maintain the following at the site for the Owner:

1. One record copy of Contract Drawings, Specifications, Addenda, Change Orders, and other modifications marked currently to record changes made during construction.

2. One record copy of reviewed Shop Drawings, Product Data, and Samples.

3. RFI Log.

4. Addenda Log.

5. Submittal Log.

6. Inspection Log.

B. Documents shall be kept in an approved location, maintained in a clean, dry, legible condition, and shall not be used for construction purposes.

C. The Contractor shall advise the Architect of changes and deviations made during construction.

D. Make documents available at all times for review by Architect and Owner.

E. Comply with related requirements of the Agreement and General Conditions and individual Specification Sections.

1.2 RECORDING

A. Label each document "PROJECT RECORD."

B. Do not permanently conceal any Work until required information has been recorded.

C. Drawings:

1. Make day-to-day changes and notations on a specially designated complete set of blue-line or black-line prints as the work proceeds.

2. Markings and notations shall be neatly and accurately made using nonfading, clear, permanent markings. Use contrasting colors for different disciplines of Work and where required for clarity.

3. Drawings shall be marked to indicate:

    a. Measured depths of various elements of foundation in relation to survey or other approved datum.

    b. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.

    c. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

    d. Variations in layout of buildings and improvements, including grading, steps, retaining walls, and similar features.

    e. Field changes of dimensions and detail.

    f. Changes made by Change Order or Construction Change Directive.

    g. Significant details not shown on the original Contract Drawings.

4. Upon completion of the Work, all changes and notations shall be neatly and accurately transferred by the Contractor to a complete set of reproducible vellum transparencies of the Drawings as originally issued for construction obtained from the Architect at Owner's cost.

    a. Where the Architect's Drawings are not of sufficient size and detail, the Contractor shall furnish his own drawings for incorporation of details and dimensions.

    b. Each sheet of Record Drawing transparencies shall be signed and certified by the Contractor as to their correctness and turned over to the Architect.

5. Record Drawings are specifically required for the following Work:

    a. Electrical (include exterior lighting, sound, fire, and all other related Work).

    b. Plumbing.

    c. Irrigation.

    d. Fire sprinkler and hydrant system.

    e. HVAC.

D. Specifications:

1. On a specially designed complete set of the Project Manual, legibly mark each Specification Section to record:

a. Manufacturer, trade name, catalog number, color designation (if applicable), and supplier of each product and item of equipment actually installed.

b. Changes made by Addendum, Change Order, or Construction Change Directive.

c. Other matters not originally specified.

d. Where selection of manufacturers is offered, indicate which manufacturer's product was installed.

2. The Architect will furnish a Project Manual as originally issued for construction for markup.

E. "Project Record" set of Drawings and Specifications shall be kept at the Project site at all times for review by the Architect and Owner.

1.3 INTERIM REVIEW

A. Project Record Documents are subject to review at time of review of payment request.

B. If Record Documents are not properly maintained, Owner may withhold all or a portion of payment to Contractor.

1.4 SUBMITTALS

A. At completion of Work under the Contract, deliver Record Documents to Architect.

B. Partial submittals are not acceptable, unless requested by Architect.

C. Submit documents to Architect prior to claim for final Application for Payment.

D. Accompany submittal with transmittal letter, in duplicate, containing:

1. Date.

2. Title of Project.

3. Contractor's name and address.

4. Title of each Record Document.

5. Certification that each document, as submitted, is complete and accurate.

6. Signature of Contractor or his authorized representative.

PART 2 – PRODUCTS

Not used

PART 3 – EXECUTION

Not used

END OF SECTION

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SECTION 02 41 19
MINOR DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Removal of designated building equipment and fixtures.

B. Removal of designated construction.

C. Disposal of materials.

D. Storage of removed materials to be re-used.

E. Cap and identify utilities.

F. Temporary partitions to allow building occupancy.

G. Schedule of materials and equipment.

H. Temporary fire protection.

I. Coordination with hazardous waste removal.

1.2 SUBMITTALS

A. Submit pre-demolition photographs showing conditions of all items to remain that might be misconstrued as damaged by demolition operations. Submit before Work begins.

1.3 PROJECT RECORD DOCUMENTS

A. Submit record drawings under provisions of **Section 00 65 36**.

B. Accurately record locations of capped utilities, subsurface obstructions.

1.4 REGULATORY REQUIREMENTS

A. Conform to CBC and local ordinances for demolition work, safety of structure, electrical disconnection and reconnection, and dust control.

B. Comply with California Fire Code (CFC), California Code of Regulations, (CCR) Title 24, Part 9, Article 87 - Fire Safety During Construction, Alteration or Demolition of a Building, Section 8706 - Fire Safety During Demolition.

C. Obtain required permits from authorities before performing Work.

D. Notify affected utility companies before starting Work and comply with their requirements.

E. Do not close or obstruct egress width to exits.

F. Do not disable or disrupt building fire or life safety systems without 14 days prior written notice to the County.

G. Conform to procedures applicable when hazardous or contaminated materials are discovered.

1.5 SEQUENCING

A. Sequence Work under the provisions of **Section 00 31 13**.

B. All Work to be performed in one phase unless otherwise noted by County.

1.6 SCHEDULING

A. Schedule Work under provisions of **Section 01 33 00**.

B. Schedule Work to coincide with new construction.

C. Describe demolition removal procedures and schedule.

D. Perform noisy and dusty work per **Sections 00 72 13 and 01 56 00**.

1.7 PROJECT CONDITIONS

A. Areas of buildings to be demolished will be evacuated and their use discontinued before start of Work.

B. County will occupy building(s) adjacent to demolition area. Conduct demolition so County's operation will not be disrupted.

C. Provide at least 72 hours notice to County of activities that will affect County's operation.

D. Maintain access to existing walkways, exits and other adjacent occupied facilities.

E. County assumes no responsibility for areas of buildings to be demolished.

F. Hazardous Materials:

1. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.1 EXAMINATION

A. Correlate existing conditions with requirements indicated.

B. Inventory and record conditions of items to be removed and salvaged.

C. Execute pre-demolition photographs.

D. Verify that hazardous waste remediation is complete.

3.2 PREPARATION

A. Erect and maintain weatherproof closures for exterior openings.

B. Erect and maintain temporary partitions to prevent spread of dust, fumes, noise, and smoke to provide for County occupancy as specified in **Section 01 56 00**.

C. Protect existing items which are not indicated to be altered.

3.3 DEMOLITION REQUIREMENTS

A. Conduct demolition to minimize interference with adjacent and occupied building areas.

B. Cease operations immediately if structure appears to be in danger. Notify Project Engineer. Do not resume operations until directed.

C. Maintain protected egress and access to the Work.

D. Maintain fire safety during demolition in accordance with CFC, Article 87, Section 8706.

3.4 DEMOLITION

A. Disconnect, cap and identify designated utilities within demolition areas.

B. Salvaged Items: Clean, pack, and identify items for storage or delivery to County.

C. Demolish in an orderly and careful manner. Protect existing supporting structural members.

D. Except where noted otherwise, remove demolished materials from site. Do not burn or bury materials on site.

E. Remove demolished materials from site as Work progresses. Upon completion of Work, leave areas in clean condition.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Except for items to remain, remove all demolished materials from site and dispose in an EPA approved landfill.

B. Do not burn or bury materials on site.

3.7 SCHEDULES

A. Remove the following items for the County's retention. Contractor shall notify the County's Representative if any of the scheduled items are to be removed in the course of demolition and remodeling. County will, within 48 hours, notify Contractor as to which of the above items are to be treated as salvage, and to what location they should be delivered, and shall have the necessary staff and equipment available at that site to unload these items.

1. Toilets.

2. Showers.

3. Low voltage components. .

C. Protect existing materials and equipment indicated to remain in place on the drawings. Notify Project Engineer/ County in areas of uncertainty or discrepancy.

END OF SECTION

SECTION 02 41 20
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SECTION INCLUDES

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

1.2 SUBMITTALS

A. Submit written request in advance of cutting or alteration which affects:

1. Structural integrity of any element of Project.
2. Integrity of weather-exposed or moisture-resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight-exposed elements.
5. Work of County or separate contractor.

B. Include in request:

1. Identification of Project.
2. Location and description of affected Work.
3. Necessity for cutting or alteration.
4. Description of proposed Work, and Products to be used.
5. Alternatives to cutting and patching.
6. Effect on Work of County or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time Work will be executed.

1.3 DESIGN CRITERIA

A. Patching shall achieve security, strength, and weather protection, as applicable, and shall preserve continuity of existing fire ratings.

B. Patching shall successfully duplicate undisturbed adjacent finishes, colors, textures, and profiles. Where there is dispute as to whether duplication is

successful or has been achieved to a reasonable degree, the Architect of Record's judgment shall be final.

C. Patching may be temporary if it is to be eventually replaced in a subsequent phase of Work.

1.4 CUTTING AND PATCHING

A. Structural Work: Do not cut-and-patch structural Work in a manner resulting in a reduction of load-carrying capacity or load/deflection ration. Submit proposal and request and obtain Engineer's approval before proceeding with cut-and-patch of new and/or existing structural Work.

B. Operational/Safety Limitations: Do not cut-and-patch operational elements and safety components in a manner resulting in reduction of fire rating of any assembly, decreased performance, shortened useful life, or increased maintenance. The Contractor shall be responsible for the location of all existing utilities and coordinate all Work to avoid any interruption of service to adjacent properties and/or to other facility operations without proper notification.

C. Visual/Quality Limitations: Do not cut-and-patch Work exposed to view, such as plaster, in a manner resulting in noticeable reduction of visual qualities and similar qualities, as judged by Architect of Record. (Exterior and interior).

D. Additional Requirements: In addition to Contract requirements, upon written instructions to Architect of Record:

1. Uncover Work to provide for Architect of Record's observation of covered Work.

2. Remove samples of installed materials for testing.

E. Limitation on Approvals: Architect of Record's approval to proceed with cutting-and-patching does not waive right to later require removal/replacement of Work found to be cut and patched in an unsatisfactory manner, as judged by Architect of Record.

1.5 PAYMENT FOR INCURRED COSTS

A. The costs caused by ill-timed or defective Work, or Work not conforming to Contract Documents, including costs for additional service of Architect of Record, shall be paid by the party responsible for ill-timed, rejected or non-conforming Work.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Primary Products: Those required for original installation.

B. Substitutions: Under provisions of Section 01 25 13.

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

D. If identical materials are unavailable or cannot be used, use materials that visually match the original. Consult with Architect of Record for approval.

PART 3 - EXECUTION

3.1 GENERAL

A. Execute cutting, fitting, and patching 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/electrical Work.

3.2 EXAMINATION

A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching. Verify compatibility with and suitability of substrates and finishes to accept the new Work.

B. After uncovering existing Work, inspect conditions affecting performance of Work.

C. Do not cut and patch any piping, conduit, or equipment supports or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

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

E. Beginning of cutting or patching means acceptance of existing conditions.

3.3 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work. Provide 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.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.4 CUTTING AND PATCHING

A. Execute cutting, fitting, and patching to complete Work.

B. Fit products together, to integrate with other Work.

C. Uncover Work to install ill-timed Work.

D. Remove and replace defective or non-conforming Work.

E. Remove samples of installed Work for testing when requested.

F. Provide openings in the Work for penetration of mechanical and electrical Work.

G. Cut rigid materials using saw or drill. Pneumatic tools are not allowed without prior approval.

3.5 PERFORMANCE

A. Execute Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

B. Employ skilled and experienced installer to perform cutting and patching.

C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

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

E. Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

F. Restore Work with new products in accordance with requirements of Contract Documents.

G. Fit Work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal all voids with fire-rated material, to full thickness of the penetrated element.

I. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

END OF SECTION

SECTION 03 21 00
REINFORCING STEEL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Requirements of Division 1 apply to all work of this Section.

1.2 SCOPE

A. Unless noted otherwise, furnish and install reinforcing for all concrete, including dowels, chairs, spacers, bolsters, etc., necessary for supporting and fastening reinforcement in place as shown on the Drawings and specified herein.

1.3 RELATED WORK (See also Table of Contents)

A. Cast-In-Place Concrete: Section 03 30 00.

B. Concrete Unit Masonry: Section 04 22 00.

1.4 QUALITY ASSURANCE

A. General:
   1. Acceptable Manufacturers: Regularly engaged in the manufacture of steel bar and welded wire fabric reinforcing.
   2. Installer Qualifications: Installation shall be done only by an installation firm normally engaged in this business. All work shall be performed by qualified mechanics working under an experienced supervisor.
   3. Welding Qualifications: Welding procedures, welding operators and welders shall be qualified in accordance with AWS D1.4 - "Structural Welding Code Reinforcing Steel".
      a. Welders whose work fails to pass inspection shall be re-qualified before performing further welding.
   4. Reinforcement Work shall conform to ACI 301 and ACI 318 Chapter 25, as minimum standards.
   5. Allowable Tolerances:
      a. Fabrication:
         1) Sheared length: 1 inch.
         2) Depth of truss bars: Plus or minus ½-inch.
         3) Ties: Plus or minus ½-inch.
         4) All other bends: Plus or minus 1 inch.
      b. Placement:
         1) Concrete cover to form surfaces: Plus or minus ¼-inch.
         2) Minimum spacing between bars: Plus or minus ¼-inch.
         3) Crosswise of members: Spaced evenly within 2 inches of stated separation.

4) Lengthwise of members: Plus or minus 2 inches.

c. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 2 bar diameters.

B. Standards and References: (Latest Edition unless otherwise noted):

1. 2016 California Building Code (CBC).

2. American Concrete Institute (ACI).
   a. ACI 301 - "Specifications for Structural Concrete for Buildings".
   b. ACI 315 - "Details and Detailing of Concrete Reinforcing".
   c. ACI 318 – “Building Code Requirements for Structural Concrete”
3. American Society for Testing and Materials (ASTM).
   a. ASTM A82 - "Cold Drawn Wire for Concrete Reinforcement".
   b. ASTM A185 - "Welded Steel Wire Fabric for Concrete Reinforcement".
   c. ASTM A615 - "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement".
   d. ASTM A706 – “Low Alloy Steel Deformed Bars for Concrete Reinforcement”.
4. Concrete Reinforcing Steel Institute (CRSI) - "Manual of Standard Practice".
5. American Welding Standard (AWS).
   a. AWS D1.4 - "Structural Welding Code – Reinforcing Steel".

C. Submittals: (Submit under provisions of Section 01 33 00)

1. Shop Drawings: Prepare in accordance ACI 315. Indicate bending diagrams, assembly diagrams, splicing and laps of bars and shapes, dimensions and details of bar reinforcing and assemblies. Correctness of all reinforcing requirements and work is the responsibility of Contractor. Identify such shop drawings with reference thereon to sheet and detail numbers from Contract Drawings.
   a. Do not use scaled dimensions from Contract Drawings in determining the lengths of reinforcing bars.
   b. No reinforcing steel shall be fabricated without approved shop drawings.
   c. Any deviations from the contract documents must be clearly indicated as a deviation on the shop drawings.
   d. Areas of high congestion, including member joints and embed locations shall be fully detailed to verify clearances and assembly parameters and coordination with other trades.
2. Certified mill test reports of supplied reinforcing indicating chemical and physical analysis. Tensile and bend tests shall be performed by the mill in accordance with ASTM A615.
3. Product Data:
   a. Manufacturer's specifications and installation instructions for splice devices.
   b. Bar Supports.
4. Certificates of Compliance with specified standards:
   a. Reinforcing bars.
   b. Welded wire fabric.
   c. Welding electrodes.
5. Samples: Only as requested by Architect.

D. Tests and Inspections:
   1. A testing program is required prior to start of construction. Testing program to be done in compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
   2. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A615. One Series of tests for each missing report to be borne by the Contractor.
   3. When inspections are indicated for reinforcement placement on the Structural drawings, a special inspector shall be employed to inspect reinforcing placement per CBC Section 1704.
   4. When tests are indicated for reinforcing steel on the structural drawings, the reinforcing steel used shall be tested in accordance with ASTM A615. One tensile and one bend test for each 2-1/2 tons of steel or fraction thereof, shall be made.
   5. Inspect shop and field welding in accordance with AWS D1.4, including checking materials, equipment, procedure and welder qualification as well as the welds. Inspector will use non-destructive testing or any other aid to visual inspection that he deems necessary to assure himself of the adequacy of the weld.
   6. Tests and inspection shall be performed by Owners testing agency except when needed to justify rejected work, in which case the cost of retests and reinspection shall be borne by the Contractor.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.

B. Handle and store materials to prevent contamination.
   1. Store reinforcement in a manner that will prevent excessive rusting or coating with grease, oil, dirt, and other objectionable materials. Storage shall be in separate piles or racks so as to avoid confusion or loss of identification after bundles are broken.

C. Deliver and store welding electrodes in accordance with AWS D1.4.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Reinforcement Bars: ASTM A615, Grade 60 for all bars.
   1. Bar reinforcement to be welded shall meet chemical requirements of ASTM A706.
   2. Longitudinal reinforcement in column and beams of special moment-resisting frames shall meet the chemical requirements of ASTM A706.

B. Stirrups and Ties: ASTM A615, Grade 60 for all bars.

C. Steel Dowels: Same grade as bars to which dowels are connected.

D. Welded wire Fabric: ASTM A185.

E. Tie Wires: FS-QQ-W-461, annealed steel, black, 16 gauge minimum.

F. Welding Electrodes: AWS D1.4, low hydrogen, E70XX series.

G. Bar Supports:
   1. Typical, unless noted otherwise; CRSI Class 2 wire supports.
      a. Do not use wood, brick or other objectionable materials.
      b. Do not use galvanized supports.
   2. Supports placed against ground: Pre-cast concrete blocks not less than 4 inches square with embedded wire.

H. Mechanical Couplers: Comply with ACI 318 section 25.5.7.1

PART 3 - EXECUTION

3.1 FABRICATION

A. Shop fabricate reinforcement to meet requirements of Drawings.

B. Fabricate reinforcement in accordance with the requirements of ACI 315 where specific details are not shown or where Drawings and Specifications are not more demanding.

C. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of bars for bending will not be permitted.

D. Reinforcing shall not be field bent or straightened without structural engineer's review.

E. Provide offsets in rebar (1:6 maximum) where required to maintain clearances.

3.2 CONDITION OF SURFACES

A. Examine surfaces and conditions receiving or affecting the work. Do not proceed until unsuitable conditions have been corrected.

3.3 GENERAL

A. Concrete shown without reinforcing shall be reinforced as similar parts shown with

reinforcing except where concrete is specifically noted to be unreinforced.

3.4 PLACEMENT

A. All reinforcement shall be accurately set in place, lapped, spliced, spaced rigidly and securely held in place and tied with specified wire at all splices and crossing points. All wire tie ends shall point away from the form. Carefully locate all dowel steel to align with wall and column steel.
   1. Bars shall be in long lengths with laps and splices as shown. Offset laps in adjacent bars. Place steel with clearances and cover as shown. Bar laps shall be as indicated on the Drawings. Tie all laps and intersections with the specified wire.
   2. Maintain clear space between parallel bars not less than 1-1/2 times nominal diameter, but in no case shall clear space be less than 1-1/2 times maximum size concrete aggregate.
   3. Reinforcing dowels for slabs shall be placed as detailed. Sleeves may be used if reviewed by the Structural Engineer before installation. Install dowel through all construction and expansion joints for all slabs on grade.

B. Bar Supports: Support and securely fasten bars with chairs, spacers and ties to prevent displacement by construction loads or placement of concrete beyond the tolerances specified. Conform to CRSI as a minimum standard.

C. Steel Adjustment:
   1. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits, or embedded items.
   2. Do not move bars beyond allowable without concurrence of Structural Engineer.
   3. Do not heat, bend, or cut bars without concurrence of Structural Engineer.
   4. Reinforcement shall not be bent after being embedded in hardened concrete.

D. Splices:
   1. Splice reinforcing as shown.
   2. Lap Splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
   3. Splice Devices: Install in accordance with manufacturer's written instructions. Obtain Structural Engineer’s review before using.
   4. Do not splice bars except at locations shown without concurrence of Structural Engineer.
      a. Where splices in addition to those indicated are required, indicate location on shop drawings clearly and highlight "for Engineer’s approval".

E. Welding:
   1. Welding is not permitted unless specifically detailed on Drawings or approved by Engineer.
   2. Employ shielding metal-arc method and meet requirements of AWS D1.4.
   3. Welding is not permitted on bars where the carbon equivalent is unknown or is determined to exceed 0.55.

4. Welding shall not be done within two bar diameters of any bent portion of a bar which has been bent cold.
5. Welding of crossing bars is not permitted.

F. Welded Wire Fabric: Install in long lengths, lapping 24 inches at end splices and one mesh at side splices. Offset laps in adjacent widths. Place fabric in approximately the middle of the slab thickness unless shown otherwise on the Drawings by dimension. Wire tie lap joints at 12-inch centers. Use concrete blocks to support mesh in proper position.

G. Reinforcement shall be free of mud, oil or other materials that may reduce bond at the time concrete is placed. Reinforcement with tightly adhered rust or mill scale will be accepted without cleaning provided that rusting has not reduced dimensions and weights below applicable standards. Remove loose rust.

H. Protection against rust:
1. Where there is danger of rust staining adjacent surfaces, wrap reinforcement with impervious tape or otherwise prevent rust staining.
2. Remove protective materials and clean reinforcement as required before proceeding with concrete placement.

I. Drawing Notes: Refer to notes on Drawings for additional reinforcement requirements.

J. Mechanical: Refer to Mechanical / Plumbing Drawings for formed concrete requiring reinforcing steel. All such steel shall be included under the work of this Section.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. Requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

A. Furnish, place and finish cast in place concrete and related work as indicated on the Drawings and specified here.
   1. Install miscellaneous metal and other items furnished by other trades to be installed in concrete work.
   2. Provide facilities for job curing of test cylinders and transporting to Testing Laboratory.

B. Provide grouting of steel base plates as indicated on the Drawings and specified here.

1.3 RELATED WORK (See also Table of Contents)

A. Reinforcing Steel: Section 03 21 00.

1.4 QUALITY ASSURANCE

A. Standards and References: (Latest Edition unless otherwise noted)
   1. 2016 California Building Code (CBC).
   2. American Concrete Institute (ACI)
      a. ACI 117 – “Standard Tolerances for Concrete Construction and Materials”
      b. ACI 211.1 – “Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete”
      c. ACI 211.2 – “Standard Practice for Selecting Proportions for Structural Lightweight Concrete”
      d. ACI 301 – “Structural Concrete for Buildings”
      e. ACI 302 – “Guide for Concrete Floor and Slab Construction”
      f. ACI 305R – “Hot Weather Concreting”
      g. ACI 306R – “Cold Weather Concreting”
      h. ACI 318 – “Building Code Requirements for Structural Concrete”
      i. ACI 360 – “Design of Slabs-On-Ground”
   3. American Society for Testing and Materials (ASTM)
      a. ASTM C31 – “Making and Curing Concrete Test Specimens in the Field”
      b. ASTM C33 – “Concrete Aggregates”
      c. ASTM C39 – “Compressive Strength of Cylindrical Concrete Specimens”

d. ASTM C42 – “Obtaining and Testing Drilled Cores and Sawed Beams of Concrete”
e. ASTM C94 – “Ready-Mixed Concrete”
f. ASTM C109 – “Test of Hydraulic Cement Concrete”
g. ASTM C143 – “Slump of Hydraulic Cement Concrete”
h. ASTM C150 – “Portland Cement”
i. ASTM C172 – “Sampling Freshly Mixed Concrete by the Volumetric Method”
j. ASTM C192 – “Making and Curing Concrete Test Specimens in the Laboratory”
k. ASTM C260 – “Air-Entraining Admixtures for Concrete”
l. ASTM C330 – “Lightweight Aggregates for Structural Concrete”
m. ASTM C494 – “Chemical Admixtures for Concrete”
n. ASTM C618 – “Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete”
o. ASTM C685 – “Volumetric Batching and Continuous Mixing”
p. ASTM C1157 – “Hydraulic-Cement”

B. Submittals: (Submit under provisions of Section 01 33 00)
1. Concrete mix designs. See “Mix Design” below. Include results of test data used to establish proportions.
2. Certificates of Compliance from Manufacturer
a. Cement certificates
b. Aggregates
c. Admixtures.
3. Data regarding hardeners and sealers.
4. Grout samples for sacked surface textures and colors upon Architects request only.
5. Layout drawings for construction, control and expansion joints.
6. Transit-mix delivery slips:
a. Keep record at the job site showing time and place of each pour of concrete, together with transit-mix delivery slips certifying contents of the pour.
b. Make the record available to the Architect for his inspection upon request.
c. Upon completion of this portion of the work, deliver the record and the delivery slips to the Architect.
7. See Section 03 21 00 for reinforcing steel submittals.

C. Tests and Inspections:
1. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
2. The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the governing agency. All tests shall be in accordance with the previously mentioned standards and ACI 318 Section 26.12. A complete record of all tests and inspections shall be kept per CBC Section 1903.1.

a. Compressive Strength: Make and cure in accordance with ASTM C-31. Test in accordance with ASTM C-39 and ACI 318 Section 26.12.
    1) A record shall be made of time and of locations of concrete from which samples were taken.
    2) Four identical cylinders shall be taken from each pour of 150 cubic yards or 5000 square feet or part thereof, being placed each day per ACI 318 Section 26.12.2. One cylinder shall be tested at age 7 days, and two at age 28 days unless otherwise specified. Preserve remaining cylinder for future use.
b. Drying Shrinkage: (applies to lightweight concrete only unless noted otherwise)
    1) A record shall be made of time cylinders and of locations of concrete from which samples were taken.
    2) Three identical 4" x 4" x 11" specimens shall be made from same concrete as used in structure. Percent of shrinkage shall be reported at 21 days after 7 day moist curing period. Average results of 3 specimens shall be used as the accepted value. The value for laboratory cast specimens shall not exceed .075%. If field test specimens are used in lieu of laboratory specimens, a tolerance of +33% may be used.
    3) Test specimens in accordance with ASTM C157.
c. Concrete consistency (slump) shall be tested in accordance with ASTM C143.

3. Provide full time inspection per CBC Section 1704.3 during the taking of test specimens and during the placing of all concrete and embedded steel.
4. See Section 03 21 00 for reinforcing steel tests and inspections.
5. Provide concrete batch plant inspections per ASTM C685.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Portland Cement: ASTM C 150, Type II or Type V. One brand of cement shall be used throughout to maintain uniform color for all exposed concrete.

B. Concrete Aggregate: Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as combination of sizes when two or more are used, shall conform to grading requirements of appropriate ASTM Standards and ACI 318.
    1. Concrete Aggregates for Standard Weight Concrete: ASTM C 33. Aggregate shall be crushed granite or Perkins type.
    2. Concrete Aggregates for Lightweight Concrete: ASTM C330 to produce concrete weighing no more than 115 pcf at 28 days. Aggregate shall be vacuum saturated expanded shale as produced through the rotary kiln method.

C. Water: Clean and free from injurious amounts of oil, acids, alkali, organic matter and other deleterious substances; suitable for domestic consumption.

D. Admixtures shall be subject to prior approval by the Architect, in accordance with ACI 318 Section 26.4.1.4. Calcium Chloride is not permitted.
   1. Water Reducing
      a. ASTM C494 Type A - for use in cool weather.
      b. ASTM C494 Type D - for use in hot weather.
   2. Air Entraining
      a. Conform to ASTM C 260
   3. Fly Ash
      a. Conform to ASTM C 618
   4. Mid-Range Water-Reducers
      a. Master Builders “Polyheed” or approved equal.
   5. Fly Ash Pozzolan
      a. Conforming to ASTM A-618 Class F

E. Slab on Grade Vapor Retarder
   1. Vapor Retarder must have the following qualities:
      a. 15 mil thickness minimum
      b. WVTR less than 0.008 as tested by ASTM E 96
      c. ASTM E 1745 Class A (Plastics)
   2. Vapor Retarder Products
      a. Stego Wrap Vapor Retarder by STEGO Industries LLC.
      b. W.R. Meadows Premoulded Membrane with Plasmatic Core.
      c. Zero-Perm by Alumiseal.

   3. Vapor Retarder Tape
      a. Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
      b. Minimum 8-mils thick
      c. Minimum 3 3/4 inches wide
      d. Manufactured from High Density Polyethylene
      e. Pressure Sensitive Adhesive

F. Sand: Clean, dry, well graded.

G. Abrasive aggregate for non-slip finish: Fused aluminum oxide grits, graded 12/30. Use factory-graded rustproof and non-glazing material that is unaffected by freezing, moisture and cleaning materials.
   1. Products offered by manufacturers to comply with the above requirements include: A-H Alox; Anti-Hydro Waterproofing Co., Toxgrip; Toch Div. - Carboline, or approved equal.

H. Expansion Joint Filler:
   1. Joint fill shall be a preformed non-extruded resilient filler, saturated with bituminous materials and conforming to ASTM D 1751. Products shall be equivalent to Burke "Fiber Expansion Joint", W.R. Meadows "Fibrated Expansion Joint Filler", or approved equal.

I. Bonding Agent: Sonneborn "Sonobond"; the Euclid Chemical Company "Euco-Weld"; Larsen Products Corp., "Weld-Crete" or approved equivalent.

J. Concrete Sealer: Cure and Seal, as manufactured by the Euclid Chemical Company "Aqua-Cure VOX", Sonneborn "Kure-N-Seal WB", Burke "Spartan-Cote",W.R. Meadows "Intex" or approved equal conforming to ASTM C-309, Type I, Class B requirements, and conforming to State of California Air Resources Board VOC Regulations.

K. Concrete Hardener/Sealer: Clear, water soluble, sprayable in-organic silicate based hardener/sealer or acrylic co-polymer resin. Products shall be equal to Euclid Chemical Company "Eucosil", Burke "Spartan-Cote", Sonneborn "Sonosil", W.R. Meadows "Pena-Lith", or approved equal and must conform to State of California Air Resources Board VOC Regulations.

L. Concrete Cure: Water based curing compound conforming to ASTM C-309, Type 1, Class A and B, and AASHTO Specification M-148; Type 1, Class A and B requirements, and State of California Air Resources Board VOC Regulations. Product shall be equivalent to Euclid Chemical Company "Kurez VOX", Burke "No. 1127" or "Aqua-Resin Cure", W.R. Meadows "1100 Clear", or approved equal.

M. Non-Shrink Grout: See Section 2.2.A.6.

2.2 CONCRETE

A. Concrete Mixes:

1. Concrete:
   Strength: 3500 lbs. per square inch at 28 days.
   Maximum Aggregate Size: 1 inch.
   Minimum Cement Content: As required by mix design. (ACI 318 Section 26.4.3).
   5.5 sacks per yard minimum.
   Maximum Water to Cement Ratio: 0.45
   Admixture: Water reducing.
   Weight: 145 lbs. per cubic foot
   Use for building slab on grade
   Maximum Fly Ash content as a percentage of total cementitious material: 15%

2. Grout shall be non-shrink, non-metallic, flowable Type "713" or "928" by BASF.
   a. Metallic grout equivalent to Master Builders "Embeco" may be used only where covered by earth, concrete, or masonry.
   b. Acceptance by Architect required before using.

B. Consistency of Concrete: Concrete slump, measured in accordance with ASTM C 143, shall fall within following limits.
   1. For General concrete placement: 3 inch plus or minus 1 inch.
   2. Mixes employing the specified mid-range water reducer shall provide a measured slump not to exceed 7 inch $\pm$1 inch after dosing, 2 inch $\pm$1 inch before dosing.

3. Concrete slump shall be taken at point of placement. Use water reducing admixtures as required to provide a workable consistency for pump mixers. Water shall not be added at the jobsite without written review by the structural engineer.

C. Mix Design:
   1. Initial mix design shall be prepared for all concrete in accordance with ACI 318 Section 26.4.3. Mix proportions shall be determined in accordance with ACI 318 Section 26.4.3 or 26.4.4. In the event that additional mix designs are required due to depletion of aggregate sources, aggregate not conforming to Specifications or at request of Contractor, these mixes shall be prepared as above.
   2. Contractor shall notify the Testing Laboratory and Architect of intent to use concrete pumps to place concrete so that mix designs can be modified accordingly.
   3. Fly ash shall not exceed fifteen percent of the total cementitious material.
   4. Provide 6% air entrainment typical for exterior concrete exposed to freeze-thaw cycles.
   5. Owner's testing laboratory shall review all mix design before submittal.

D. Mixing:
   1. Equipment: All concrete shall be machine mixed. Provide adequate equipment and facilities for accurate measurement and control of materials.
   2. Method of Mixing:
      a. Transit Mixing: Comply with ASTM C 94. Ready mixed concrete shall be used throughout, except as specified below.
      b. On-Site Mixing: Use only if method of storing material, mixing of material and type of mixing equipment is approved by Architect. Approval of site mixing does not relieve Contractor of any other requirements of Specifications.
      c. Mixing shall be in accordance with ASTM C94 or ASTM C685.
   3. Mixing Time: After mix water has been added, concrete shall be mixed not less than 1-1/2 minutes nor more than 1-1/2 hours. Concrete shall be rejected if not deposited within the time specified.
   4. Admixtures:
      a. Air entraining and chemical admixtures shall be charged into mixer as a solution and shall be dispensed by an automatic dispenser or similar metering device. Powdered admixtures shall be weighed or measured by volume as recommended by manufacturer. Accuracy of measurement of any admixture shall be within plus or minus 3%.
      b. Two or more admixtures may be used in same concrete, provided such admixtures are added separately during batching sequence, and provided further that admixtures used in that combination retain full efficiency and have no deleterious effect on concrete or on properties of each other.
      c. All admixtures are to be approved by Structural Engineer prior to commencing this work.
   5. Retempering:
      a. Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall be discarded, not retempered.

b. Indiscriminate addition of water to increase slump is prohibited.
c. When concrete arrives at project with slump below that suitable for placing, water may be added only if neither maximum permissible water-cement ratio nor maximum slump is exceeded. Water shall be incorporated by additional mixing equal to at least half of total mixing time required. Any addition of water above that permitted by limitation of water-cement ratio shall be accompanied by a quantity of cement sufficient to maintain proper water-cement ratio. Such additions shall only be used if approved by Architect. In any event, with or without addition of cement, not more than 2 gallons of water per cubic yard of concrete, over that specified in design mix, shall be added.

6. Cold Weather Batching: When average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, provide adequate equipment for heating concrete materials. No frozen materials or materials containing ice shall be used. When placed in forms, concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed per ACI 301.
7. Hot Weather Batching: Concrete deposited in hot weather shall have a placing temperature below 90 degrees F per ACI 301. If necessary, ingredients shall be cooled to accomplish this.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Before any concrete is placed, the following items of work shall have been completed in the area of placing.
   1. Forms shall have been erected, adequately braced, cleaned, sealed, lubricated if required, and bulkheaded where placing is to stop.
   2. Any wood forms other than plywood shall be thoroughly water soaked before placing any concrete. The wetting of forms shall be started at least 12 hours before concreting.
   3. Reinforcing steel shall have been placed, tied and supported.
   4. Embedded work of all trades shall be in place in the forms and adequately tied and braced.
   5. The entire place of deposit shall have been cleaned of wood chips, sawdust, dirt, debris, hardened concrete and other foreign matter. No wooden ties or blocking shall be left in the concrete except where indicated for attachment of other work.
   6. Reinforcing steel, at the time the concrete is placed around it, shall be cleaned of scale, mill scale or other contaminants that will destroy or reduce bond.
   7. Concrete surfaces to which fresh concrete is to be bonded shall be brush cleaned to remove all dust and foreign matter and to expose the aggregate, and then coated with the bonding adhesive herein specified.
   8. Prior to placing concrete for any slabs on grade, the moisture content of the subgrade below the slabs shall be adjusted to at least optimum moisture.
   9. No concrete shall be placed until formwork and reinforcement has been approved by Architect. Clean forms of all debris and remove standing water.

Thoroughly clean reinforcement and all handling equipment for mixing and transporting concrete. Concrete shall not be placed against reinforcing steel that is hot to the touch. Notify Structural Engineer 48 hours in advance of concrete pour.

B. Conveying: Handle concrete from mixer to place of final deposit by methods which will prevent separation or loss of ingredients. Deposit concrete in forms as nearly as practicable at its final position in a manner which will insure that required quality is obtained. Chutes shall slope not less than 4 inches and not more than 6 inches per foot of horizontal run.

C. Depositing: Deposit concrete into forms in horizontal layers not exceeding 24 inches in thickness around building, proceeding along forms at a uniform rate and consolidating into previous pour. In no case shall concrete be poured into an accumulation of water ahead of pour, nor shall concrete be flowed along forms to its final place of deposit. Fresh concrete shall not be permitted to fall from a height greater than 6 feet without use of adjustable length pipes or, in narrow walls, of adjustable flexible hose sleeves. Concrete shall be scheduled so that placing is a continuous operation for the completion of each section between predetermined construction joints. If any concreting operation, once planned, cannot be carried on in a continuous operation, concreting shall stop at temporary bulkheads, located where resulting construction joints will least impair the strength of the structure. Location of construction joints shall be as shown on the drawings or as approved by Structural Engineer. The rate of rise in walls shall not be less than 2 feet per hour.
   1. Consolidation: Concrete shall be thoroughly compacted and worked to all points with solid continuous contact to forms and reinforcement to eliminate air pockets and honeycombing. Power vibrators of approved type shall be used immediately following pour. Spading by hand, hammering of forms or other combination of methods will be allowed only where permitted by Structural Engineer. In no case shall vibrators be placed against reinforcing steel or used for extensive shifting of deposited fresh concrete. Provide and maintain standby vibrators, ready for immediate use.
   2. Hot Weather Concreting: Unless otherwise directed by the Architect, perform all work in accordance with ACI 305 when air temperature rises above 75 degrees F and the following:
      a. Mixing Water: Keep water temperature as low as necessary to provide for the required concrete temperature at time of placing. Ice may be required to provide for the design temperature.
      Aggregate: Keep aggregate piles continuously moist by sprinkling with water.
      Temperature of Concrete: The temperature of the concrete mix at the time it is being placed in the forms shall not exceed 90 degrees F per ACI 301. The method employed to provide this temperature shall in no way alter or endanger the design mix or the design strength required.
      Dampen subgrade and formwork before placing concrete. Remove all excess water before placing concrete. Keep concrete continuously wet when air temperature exceeds 85 degrees F for a minimum of 48 hours after placing concrete. For slab on grade construction, see Section 3.1.E.
      Protection: Minimize evaporation from concrete in place by providing shade

and windbreaks. Maintain such protection in place for 14 days minimum.

3. Cold Weather Concreting: Follow recommended ACI 306 procedures when average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, as approved by Architect. Concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed as shown in ACI 301. No chemicals or salts shall be used to prevent freezing and no accelerating agents shall be used without prior approval from Architect.

D. Construction Joints: Install only as indicated and noted on Drawings. Joints not indicated on Drawings shall be so located, when approved, as to least impair strength of structure, and shall conform to typical details. Construction joints shall have level tops, vertical sides. Horizontal construction joints shall be thoroughly cleaned and roughened by removing entire surface film and exposing clean aggregate solidly embedded in mortar matrix. Joints between concrete and masonry shall be considered construction joints. Vertical construction joints need not be roughened. See Drawings for doweling and required keys.
   1. Roughen construction joints by any of following methods:
      a. By sandblasting joint.
      b. By thoroughly washing joint, using a high pressure hose, after concrete has taken initial set. Washing shall be done not less than 2 hours nor more than 4 hours after concrete has been poured, depending upon setting time.
      c. By chipping and wire brushing.
   2. All decisions pertaining to adequacy of construction joint surfaces and to compliance with requirements pertaining to construction joints shall be reviewed with the Structural Engineer.
   3. Just before starting new pour, horizontal and vertical joint surfaces shall be dampened (but not saturated).
   4. Before placing regular concrete mix, horizontal construction joint surfaces shall be covered with a layer of mortar composed of cement and fine aggregate of same proportions as that used in prescribed mix, but omitting coarse aggregate.
   5. For slabs, construction joints shall be in locations shown on plan. If not shown, locate at intervals not exceeding 150 feet in each direction. Refer to drawings for proper details for reinforcing at construction joints.

E. Concrete Slabs on Grade:
   1. Exterior and interior concrete slabs on grade shall be poured as required under this Section. Base shall be accurately leveled and compacted prior to placing of concrete.
   2. Typically, interior slabs on grade shall be poured over a minimum of four (4 inch) inches of compacted crushed rock, unless otherwise indicated, over a vapor retarder.
   3. Protect slab on grade subbase from moisture prior to placing concrete. Avoid wetting rock layer to allow adequate concrete curing and avoid future vapor transmission. If the subbase has been wet excessively, verify that water has been eliminated prior to placement of concrete.
   4. Vapor Retarder installation shall be in accordance with manufacturer's instructions and ASTM E 1643-98.

a. Unroll Vapor Retarder with the longest dimension parallel with the direction of the pour.
b. Lap Vapor Retarder over footings and seal to foundation walls.
c. Overlap joints 6 inches and seal with specified tape.
d. Seal all penetrations (including pipes) per manufacturer's instructions.
e. No penetration of the Vapor Retarder is allowed except for reinforcing steel and permanent utilities.
f. Repair damaged areas by cutting patches of Vapor Retarder, overlapping damaged area 6 inches and taping all four sides with tape.

F. Control Jointing - Slabs on Grade:
1. Joints shall be in locations indicated on Drawings, or as directed by Architect.
2. Joints in interior slabs shall be made by one of following methods:
a. By use of construction joints laid out in checkerboard pattern; pour and allow alternate slabs to set; fill out balance of checkerboard pattern with second pour.
b. By use of dummy groove joints at least 1/4 depth of slab, and at least 1/8 inch wide. These joints may be sawcut as soon as wet concrete can support the weight of the equipment and operator. Delaying sawcutting past this point will make jointing ineffective.
3. Control jointing in exterior paving slabs shall be laid out in a checkerboard pattern; pour as described above, but with joint edges tooled to provide a uniform joint at least 3/8 inch in depth.
4. Slab reinforcing need not be terminated at control joints.
5. Construction and expansion joints shall be counted as control joints.

3.2 CURING AND PROTECTION

A. Curing: Exposed surfaces of all concrete used in structure shall be maintained in a moist condition for at least 7 days after placing. The following final curing processes shall normally be considered to accomplish this. Concrete shall be maintained at not less than 50 degrees F nor more than 100 degrees F for a period of 72 hours after being deposited.
1. Flatwork to be exposed, stained, or painted shall have curing process submitted and approved by the architect prior to construction.
2. Initial Curing Process - Flat Work:
a. Mist Spraying: As soon as troweling of concrete surfaces is completed, exposed concrete shall be sprayed continuously with a special atomizer spray nozzle, capable of producing a fine mist. Spraying shall be done without any dripping of water from nozzle. Amount of spraying shall be such as to maintain surface of concrete moist without any water accumulating on surface. Maintain spraying for a minimum of 12 hours, or until such time as hereinafter described curing process is applied. Mist spraying will not normally be required when the ambient air temperature is below 90 degrees F.
3. Final Curing Process - Flatwork: Except as noted, use any of following:

a. Water Curing: Concrete shall be kept wet by mechanical sprinklers or by any other approved method which will keep surfaces continuously wet.
b. Saturated Burlap Curing: Finished surfaces shall be covered with a minimum of two layers of heavy burlap which shall be kept saturated during the curing period.
c. Curing Compounds: Membrane curing compounds of chlorinated rubber or resin type conforming to ASTM C309 may be used only if specifically approved by Architect. Use of membrane curing compound will not be permitted on surfaces to be painted, or to receive ceramic tile, membrane water-proofing or hardeners and sealers. Membrane curing compound may be used in areas to receive resilient floor tile, provided it is wax-free, compatible with adhesive used and approved by adhesive manufacturer. Agitate curing compounds thoroughly by mechanical means continuously during use and spray or brush uniformly in accordance with manufacturer's recommendations. Apply immediately following final finishing operation. All curing compounds shall conform to State of California Air Resources Board VOC Regulations.
d. Waterproof paper conforming to ASTM C 171, or opaque polyethylene film, may be used. Concrete shall be covered immediately following final finishing operation. Anchor paper or film securely and seal all edges in such a manner as to prevent moisture escaping from concrete.

4. Curing Process - Formed Surfaces: Forms heated by sun shall be kept moist during curing period. If forms are to be removed during curing period, curing as described for flatwork shall be commenced immediately.

B. Refer to Drawings for areas of concrete slab not to receive curing compounds or hardening compounds. Where concrete floors are to receive heavy duty coatings, waterproof coatings and the like, verify with coating installer the type of finish required for specified coating.

C. Protection: Contractor shall be responsible for protection of finished concrete against injury by rain, cold, vibration, animal tracks, marking by visitors, vandalism, etc.

D. Provide additional curing agents or compounds, not necessarily listed herein, but as recommended and or required for use with shake type hardeners or other special coatings and coverings by their manufacturers for a complete and proper installation.

3.3 FINISHES

A. Formed Surfaces:
1. Rough Form Finish: Surfaces shall be reasonably true to line and plane with no specified requirements for selected facing materials. Tie holes and defects shall be patched and fins exceeding 1/4 inch in height shall be rubbed down with wooden blocks. Fins and other rough spots at surfaces to receive membrane

waterproofing shall be completely removed and the surfaces rubbed smooth. Otherwise, surfaces shall be left with the texture imparted by forms.

a. Rough finish shall be used for the following areas:
    1) Below grade and unexposed surfaces.

2.. Smooth Plywood Form Finish: Finish shall be true to line and plane. Tie holes and defects shall have been patched and ground with surface fins removed. Arrangement of plywood sheets shall be orderly, symmetrical, as large as practical and free of torn grain or worn edges. Surface concrete shall be treated with 1 part muriatic acid, in three parts water solution, followed immediately by a thorough rinsing with clear water. Surfaces which are glazed, have efflorescence, or traces of form oil, curing compounds or parting compounds shall be cleaned or treated to match other formed surfaces, except as otherwise indicated or specified.

a. Smooth Plywood Form Finish shall be used for the following areas:
    1) All surfaces above grade unless otherwise specified.
    2) At Contractor's option, may also be used in lieu of rough form finish.

3. Smooth Plastic Liner Finish: Surface shall be smooth, concrete free of honeycombing, air pockets larger than 1/8 inch in diameter, and fins.

a. This finish shall be used only where indicated on the Drawings.

B. Flatwork:

1. Unless otherwise indicated or specified, flatwork shall have an integral monolithic finish.
2. Integral Monolithic Finish: Apply as soon as freshly poured concrete slabs will bear weight of workers. Pour slabs full thickness to finish floor elevations indicated. At proper time, tamp surface repeatedly with a wire mesh or grid tamper in a manner to force aggregate down below surface and to bring sufficient mortar to surface to provide for a smooth coating of cement mortar over entire surface. Allow surface mortar to partially set, then float with wooden floats and finish with one of following, as required.

a. Broom Finish: Steel trowel surface to a smooth dense surface free of lines, tool marks, cat faces and other imperfections. After troweling, and before final set, give surface a broom finish, brushing in direction noted on Drawings, or as directed. Broom finish shall be used typically on exterior flatwork except as otherwise indicated or specified and shall be "medium" texture as approved by Architect.
b. Smooth Steel Trowel Finish: Apply 2 steel trowelings to obtain hard, smooth surface. All lips, irregularities, uneven levels, etc. shall be worked out before last troweling. All interior flatwork shall have a smooth steel trowel finish unless specified otherwise.

3. Tolerances:

a. For tolerances not indicated, refer to ACI 117.
b. Slabs on grade – Comply with F_F & F_L as specified by Architect, or at a minimum shall be sufficiently even to contact a 10' long straightedge with a tolerance of 1/8 inch.
c. Concrete over metal deck – Refer to Section 05 30 00 for minimum requirements.
d. Elevated slabs – Comply with Architectural requirements.

e. Finished surfaces of exterior integral finished flatwork shall not vary more than 1/4 inch from a 10' long straightedge, except at grade changes.

C. Sacked Surfaces: Exposed surfaces that are unacceptable in appearance to the Architect shall be sacked.
   1. Prepare concrete surfaces in accordance with the referenced standards. Remove any form release materials by stoning by hand, power grinding or other method approved by the Architect.
   2. Prepare concrete surfaces to receive sack finishing with a light sand blasting.
   3. For best results, grout application and rubbing should be performed when areas to be treated are shaded and during cool, damp weather. When work is to be performed in hot and dry weather, a fog spray should be available for continuous use.
   4. Prepare grout samples for matching of concrete surfaces for approval by the Architect. These shall be made in the following proportions of gray cement to white cement to sand: 1:1:2, 1:2:3, and 2:1:3, etc. until the correct matching color is obtained on the test areas. Sand should be fine enough to pass the Number 30 sieve. Mixes should be made to a good workable consistency in a clean container and the mix with the best color chosen, or modified if needed.
   5. Provide sufficient qualities of sand and cement from the same source for the complete work at the job site.
   6. Mixing and Application:
      a. Mixing of grout on the job should be timed for it to be used up within 1 to 1-1/2 hours.
      b. Let the grout stand 20 to 30 minutes after mixing, and then remixed before applying.
      c. Soak the concrete surface thoroughly with water at least 15 minutes before applying grout and again just before application so that the surface is adequately wet during the operation.
      d. Apply grout with plasterer's trowel or sponge rubber float in sweeping strokes from the bottom up. Brush or spray gun applications may be used when approved by the Architect.
      e. Work in freshly applied grout vigorously with a sponge rubber float, then let sit until some of its plasticity is gone but not until it loses its damp appearance. At this point it shall be rubbed with clean, dry burlap to remove the excess grout, leaving no visible film on the surface but filling all air holes.
      f. Keep the surface wet for a day after grouting and sack rubbing are completed.
   7. Alternate methods of application and materials shall be subject to the approval of the Architect.

3.4 PATCHING

A. Formed Surfaces:
   1. Promptly upon removal of contact forms and after concrete surfaces have been inspected, form ties shall be removed and all necessary patching and pointing shall be expertly done.

2. Honeycombed areas shall be removed down to sound concrete, coated with a bonding grout or approved compound and patched using a low shrinkage high bond mortar. Patched areas shall be cured by being kept damp for at least 5 days.
3. Tie holes shall be cleaned, dampened and filled solid with patching mortar or cement plugs of an approved variety.

B. Slabs on Grade: After entire slab is finished, shrinkage cracks that may appear shall be patched as follows:
1. Where slab is not exposed or where appearance is not important, cracks larger than 1/32 inch wide shall be filled with cement grout and struck off level with surface.
2. Where slab is exposed and appearance is important, unsightly cracks shall be repaired in a manner satisfactory in appearance to Architect. If this cannot be accomplished, concrete shall be considered defective.

3.5 DEFECTIVE CONCRETE

A. Defective concrete shall mean any of the following:
1. Concrete not meeting 100 percent of the specified 28 day compressive strength.
2. Concrete exhibiting rock pockets, voids, spalls, streaks, cracks, exposed reinforcing to extent that strength, durability, or appearance is adversely affected.
3. Concrete significantly out of place, line, or level.
4. Concrete not containing the required embedded items.

B. Upon determination that concrete strength is defective:
1. Should cylinder tests fall below minimum strength specified, concrete mix for remainder of work shall be adjusted to produce required strength. Core samples shall be taken and tested from cast-in-place concrete where cylinders and samples indicate inferior concrete with less than minimum specified strength.
a. Cores of hardened concrete shall be taken and tested in accordance with ASTM C 42 and C 39. Number and location of such cores shall be subject to the approval of Architect.
b. Cost of core sampling and testing will be paid for by the Contractor.
c. “85 percent” reduction in ACI 318 Section 26.12.4 will not justify low cylinder tests.

C. Upon determining that concrete surface is defective, Contractor may restore concrete to acceptable condition by cutting, chipping, pointing, patching, grinding, if this can be done without significantly altering strength of structure. Permission to patch defective areas will not be considered a waiver of the right to require removal if patching does not, in the opinion of the Architect, satisfactorily restore quality and appearance.

D. If core tests indicate that concrete is below the strength specified, or if patching does not restore concrete to specified quality and appearance, the concrete shall be

deemed defective, and shall be removed and replaced without additional cost to the Owner.

E. No repair work shall begin until procedure has been reviewed by the Architect and Structural Engineer.

3.6 SURFACE HARDENER AND SEALER

A. Seal all interior exposed flatwork with clear sealer, except surfaces receiving ceramic tile, quarry tile, poured flooring or other special finishes specified, or as scheduled on the Drawings.
   1. Apply sealer in 2 or 3 coats, in accordance with manufacturer's directions, using the maximum quantity recommended.
      a. Concrete floors must be thoroughly cured for a minimum of 30 days and completely dry before treatment.
      b. Surfaces to be treated must be clean, free of membrane curing compounds, dust, oil, grease and other foreign matter.
      c. Upon completion, concrete surfaces shall be clean and without discoloration or traces of excess hardener left on the surface.

B. Apply sprayable hardener/sealer at locations as scheduled or as indicated on the Drawings. Apply in accordance with the manufacturer's favorably reviewed application instructions and recommendations.

3.7 GROUTING

A. Prepare and place grout materials at locations as indicated on the Drawings in accordance with the manufacturer's recommendations and installation instructions.

B. Pack grout materials solidly between bearing surfaces and bases or plates as indicated and to ensure no voids.

3.8 ADJUSTING AND CLEANING

A. Remove all debris, excess materials, tools and equipment resulting from or used in this operation at completion of this work.

END OF SECTION

SECTION 05 50 00
METAL FABRICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. All items of miscellaneous metal and related accessories and fasteners, including but not necessarily limited to the following:

1. Stainless steel privacy doors.

2. Anchor bolts.

1.2 RELATED SECTIONS

A. Section 05 40 00: Cold Formed Metal Framing

1.3 REFERENCES

A. Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to Work of this Section where cited by abbreviations noted below (latest additions apply).

1. California Code of Regulations, Title 24, latest edition, also known as California Building Code (CBC).

2. American Society for Testing and Materials (ASTM).

3. Federal Specifications (FS).

4. American Institute of Steel Construction's "Specification for Structural Steel Buildings."

5. American Welding Society's "Structural Welding Code" (AWS D1.1).

6. American Iron and Steel Institute's "Specifications for Design of Light Gauge Cold-Formed Stainless Steel Structural Members".

7. Steel Structures Painting Council's "Painting Manual":

a. Solvent Cleaning (SSPCC-SP 1).
b. Hand Tool Cleaning (SSPC-SP 2).

c. Brush-Off Blast Cleaning (SSPC-SP 7).

d. Hot Phosphate Surface treatment (SSPC-PT 4).

9. American Hot Dip Galvanizers Association, Inc. (AHDGA):

a. Inspection manual for hot dip galvanized products.

1.4 QUALITY ASSURANCE

A. Welded Qualifications: Welders shall be qualified in accordance with AWS D1.1.

B. Design Criteria:

1. Work shall be designed to support normally imposed loads and conform to AISC requirements.

2. Built-up parts shall not exhibit warp.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Manufacturer's literature describing products including details and dimensions.

C. Shop Drawings:

1. Show a large scale construction of various parts, methods of joining, thickness of metals, profiles of surfaces, reinforcing, anchorage, and structural supports. Include information regarding concealed and exposed joints, welds, and fastenings.

2. Where welded connectors and concrete inserts are required to receive Work, show size and locations required.

D. Samples: Only as requested by the Project Engineer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle packaged materials in original containers with seals unbroken and labels intact until time of use.

B. Discharge materials carefully and store on clean concrete surface or raised platform in safe, dry area.

1.7 JOB CONDITIONS

A. Scheduling, Sequencing:

1. Ensure timely fabrication of items to be embedded or enclosed by other Work.

2. Furnish information and assistance required for locating embedded items and be responsible for proper locations.

PART 2 - PRODUCTS

2.1 BASIC MATERIALS AND ACCESSORIES

A. Non-Ferrous Metals:

1. Structural Steel Angles: Stainless Steel Alloy 304: A276-10 (Standard Specification for Stainless Steel Bars and Shapes).

3. Steel Sheets: Stainless Steel Alloy 304: ASTM A240 (Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications. Brushed finish.

4. Steel Tubing: Stainless Steel Alloy: 304: ASTM A554 (Standard Specification for Welded Stainless Steel Mechanical Tubing).

5. Steel Plate: Stainless Steel Alloy 303. Brushed finish.

6. Welding Electrodes: E308H electrode.

7. Grout: Embeco "636" or approved equal.

C. Fastenings:

1. Typical Unfinished Bolts, Nuts, and Washers: Low carbon steel standard fasteners, externally and internally threaded, ASTM A307 Grade A; malleable washers.

2. Stainless Steel Expansion Bolts: Kwik Bolt KB TZ – SS 304. Concrete Anchors; or approved equal.

E. Sealants: For required sealants, provide permanently elastic, non-shrinking, and non-migrating type recommended for joint size and movement.

2.3 FINISHES

A. Preparations of Surfaces:

1. Thoroughly clean mill scale, dirt, grease, and other foreign matter from non-ferrous metal prior to welding.

2. Where hand cleaning methods are not adequate, clean in accordance with SSPC-SP 1, SSPC-SP 2, or SSPC-SP 7 as required.

3. Completely eliminate burrs, rough spots and pitting from normally exposed non-ferrous metal items. Grind all exposed edges smooth.

B. Hardware:

1. Hardware Including Fasteners (Bolts, Nuts, Washers, Etc.):

a. All fasteners stainless steel

b. Hardware as detailed & specified on construction documents.

2.4 SOURCE QUALITY CONTROL

A. Tests and Inspections: The County will employ testing laboratory to test welds per CBC, Section 2212A.5.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas to receive Work and verify that setting conditions and dimensions are correct to receive items.

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

3.2 INSTALLATION

A. Install Work plumb, true, rigid, and neatly trimmed out.

B. Field verify required dimensions.

D. Do not tighten fastener through finish alone without spacer washers.

D. Provide concrete inserts or predrilled expansion bolts in fastening items into concrete.

E. Protect dissimilar metals from contact with each other or with other materials causing corrosion.

F. Fasten Work tightly to prevent rattle or vibration except where expansion-contraction tolerances are required.

G. Use non shrink grout mixed in accordance with manufacturer's direction for setting frames, plates, sills, bolts and similar items.

H. Set items shown or required to be installed in sleeves with quick setting anchor cement unless otherwise noted.

I. Protect metal from damage to surface, profile and shape.

3.3 CLEANING

A. Remove protective devices only when items will safe from other construction operations or removal is required to permit related Work.

B. Clean prime-coated items as required for finish painting.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Hardwood chair rail trim.

B. Hardware and attachment accessories.

1.2 REFERENCES

A. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

B. AWPA - American Wood Preservers Association.

C. CBC - California Building Code.

1.3 QUALITY ASSURANCE

A. Manufacture millwork and finish carpentry items in accordance with quality standards of the Manual of Millwork of the Woodwork Institute.

1.4 REGULATORY REQUIREMENTS

A. Not applicable.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, finishes, and accessories to a minimum scale of 1-1/2 inch to one foot.

C. Submit two samples 6 x 6 inch in size illustrating wood grain and specified finish.

D. Submit two samples 6 inch long of wood trim.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and protect products under provisions of Section 01 60 00.

B. Conform to Section 1 of Millwork Manual.

C. Store materials in ventilated, interior locations under constant minimum temperatures of 70 degrees F and maximum relative humidity of 50 to 55 percent.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials specified under Millwork Manual Section Numbers refer to lumber grades in Millwork Manual as follows: Section 3, Lumber - Hardwood/Softwoods; Section 4, Plywood - Hardwood/Softwood; Section 6, Exterior Trim; Section 9, Interior Trim.

2.2 INTERIOR TRIM - STAIN GRADE

A. Finger jointed kiln-dried pine is acceptable for all areas except high moisture areas.

B. Trim profiles shall be mill standard shape numbers as indicated.

C. All stain-grade trim shall be solid red oak.

2.3 PLASTIC LAMINATE WALL PROTECTION MATERIALS

A. Refer to Construction Documents.

2.4 ADHESIVE

A. Adhesives: Type 1 adhesive recommended by WI to accommodate application in accordance with the Appendix to the Millwork Manual.

B. Formulation: Exterior type per AWPA C20, consisting of organic-resin solution, insoluble in water, thermally set in wood by kiln drying.

C. Wall Adhesive: Solvent release, cartridge type, compatible with wall substrate, capable of achieving durable bond.

2.5 ACCESSORIES

A. Wood Screws: Size and type to suit application, galvanized finish for interior use. Concealed and covered with wood filler.

B. Concrete Anchors: 3/16" x 1x1/4" Concrete Screws. Pre-tap holes and recess into wood trim. Cover with wood filler.

C. Bolts, Nuts, Washers, Blind Fasteners, Lags, and Screws: Size and type to suit application; galvanized finish for interior use, stainless steel for exterior use.

D. Lumber for Shimming and Blocking: Softwood lumber of Douglas Fir species.

E. Primer: Alkyd primer sealer.

F. Wood Filler: Solvent base, tinted to match surface finish color.

2.6 FABRICATION

A. Fabricate work in accordance with WI Custom grade standards.

B. Shop assemble work for delivery to site, permitting passage through building openings.

C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.

E. Cap exposed plastic laminate finish edges with material of same finish and pattern unless otherwise noted in drawings.

F. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and openings are ready to receive work and field measurements are as instructed by the fabricator.

B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work.

C. Verify adequacy of backing and support framing.

D. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials or that will be permanently concealed from view.

3.3 INSTALLATION

A. Install work in accordance with WI Manual of Millwork, Custom quality standard.

3.4 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

3.5 PREPARATION FOR FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand Work smooth.

3.6 PROTECTION

A. Protect finished installation under provisions of Section 01 45 00.

END OF SECTION

SECTION 07 92 00
JOINT SEALERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Preparing sealant substrate surfaces.

B. Sealant and backing.

1.2 SUMMARY OF SEALANT LOCATIONS

A. Joints in Horizontal Surfaces:

1. Expansion and isolation joints in cast-in-place concrete slabs.

2. Perimeter joints of toilet fixtures.

3. Other joints as indicated.

B. Joints in Vertical Surfaces:

1. Perimeter joints of toilet fixtures.

2. Other joints as indicated.

1.3 REFERENCES

A. ASTM C834 - Latex Sealing Compounds.

B. ASTM C919 - Practices for Use of Sealants in Acoustical Applications.

C. ASTM C920 - Elastomeric Joint Sealants.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants.

E. ASTM D217 - Cone Penetration of Lubricating Grease.

F. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

G. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.

H. SWRI - (Sealant, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Submit Product Data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.

C. Submit two 4-inch long Samples illustrating colors selected.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years documented experience.

B. Applicator: Company specializing in applying the Work of this Section with minimum three years documented experience, approved by sealant manufacturer.

C. Conform to Sealant, Waterproofing, and Restoration Institute (SWRI) requirements for materials and installation.

D. Perform Work in accordance with ASTM C1193.

E. Perform acoustical sealant application Work to provide maximum STC values in accordance with ASTM C919.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building spaces.

B. Do not install sealant when temperature is less than 40 degrees F.

C. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.7 WARRANTY

A. Provide sealant manufacturer's 5-year warranty against defects in materials.

B. Include coverage for installed sealants and accessories which fail to achieve air and water seal and exhibit loss of adhesion or cohesion or do not cure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers and products are listed for each sealant type.

B. Substitutions: Under provisions of Section 01 25 13.

2.2 SEALANTS

A. One-Part Mildew-Resistant Silicone Sealant: Complying with ASTM C920, Type S, Grade NS, Class 25.

1. Dow Corning Corp., “Dow Corning 786”.

2. General Electric Co., “Sanitary 1700”.

3. Rhone-Poulene Inc., “Rhodorsil 6 B White”.

4. Tremco, Inc., “Proglaze White”.

5. Pecora Corp., “863” or “898” White.

2.3 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that joint openings are ready to receive Work and field measurements are as shown on Drawings and recommended by the manufacturer.

B. Beginning of installation means installer accepts existing substrate.

3.2 PREPARATION

A. Clean and prime joints in accordance with manufacturer's instructions. Prime if recommended by manufacturer.

B. Remove loose materials and foreign matter which might impair adhesion of sealant.

C. Verify that joint backing and release tapes are compatible with sealant.

D. Perform preparation in accordance with ASTM C1193.

E. Protect elements surrounding the Work of this Section from damage or disfiguration.

3.3 INSTALLATION

A. Install sealant in accordance with manufacturer's instructions.

B. Measure joint dimensions and size materials to achieve required width/depth ratios.

C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.

D. Install bond breaker where joint backing is not used.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Tool joints concave unless otherwise detailed.

3.4 CLEANING AND REPAIRING

A. Clean Work under provisions of Section 00 65 36.

B. Clean adjacent soiled surfaces.

C. Repair or replace defaced or disfigured finishes caused by Work of this Section.

3.5 PROTECTION OF FINISHED WORK

A. Protect sealants until cured.

END OF SECTION

SECTION 09 65 00
RESILIENT FLOORING AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 – Specification sections, apply to work of this section.

1.2 SUMMARY

A. The work of this Section includes:

1. Rubber tile flooring
2. Rubber sheet flooring
3. Rubber wall base
4. Accessories
5. Responsibilities, preparation/installation

B. Related Sections: Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02 41 20 - Minor Demolition for Remodeling

C. References (Industry Standards)
1. American Association of Textile Chemists and Colorists
   a. AATCC 134 Electrostatic Propensity of Carpets
2. American National Standards Institute
   a. ANSI ESD S97.2 Floor Materials and Footwear – Voltage Measurement on a Person
3. American Society for Testing and Materials
   a. ASTM C423 Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
   b. ASTM C518 Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
   c. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers -- Tension

d. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
e. ASTM D2240 Standard Test Method for Rubber Property -- Durometer Hardness
f. ASTM D3389 Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform, Double Head Abrader)
g. ASTM D6499 Standard Test Method for The Immunological Measurement of Antigenic Protein in Natural Rubber and its Products
h. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
i. ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
j. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
k. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
l. ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
m. ASTM E2179 Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors
n. ASTM E2180 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials

o. ASTM F150 Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
p. ASTM F155 Method of Test for Temper of Strip and Sheet Metals for Electronic Devices
q. ASTM F386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
r. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
s. ASTM F925 Standard Test Method for Resistance to Chemicals of Resilient Flooring
t. ASTM F970 Standard Test Method for Static Load Limit
u. ASTM F1344 Standard Specification for Rubber Floor Tile
v. ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
w. ASTM F1514 Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color
x. ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing
y. ASTM F1860 Standard Specification for Rubber Sheet Floor Covering With Backing

z. ASTM F1861 Standard Specification for Resilient Wall Base
aa. ASTM F2055 Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
bb. ASTM F2169 Standard Specification for Resilient Stair Treads
cc. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using *in situ* Probes
dd. ASTM F2199 Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat
ee. ASTM F2420 Standard Test Method for Determining Relative Humidity on the Surface of Concrete Floor Slabs Using Relative Humidity Probe Measurement and Insulated HoodASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

4. European Norm

a. FTM 101 C 4046 Static Decay

5. International Organization for Standardization

a. ISO 140-8 Measurement of sound insulation in buildings and of building elements - Part 8:
Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

6. National Fire Protection Association

a. NFPA 253 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source

b. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's Installation Guide and Maintenance Guide for each material proposed for use (available on www.nora.com/us).

B. Samples:
1.) Submit five (5) 4 inch by 4 inch samples and one 24 inch by 24 inch sample of each flooring product in each color specified, for verification.

2.) Submit five (5) 2 inch samples and one (1) 24 inch sample of wall base.

C. SDS (Safety Data Sheets) should be submitted for all adhesives used: nora® membrane, nora® primer, nora® patch, nora® leveler, nora® heat welding rod, nora® cold weld, nora® liquid wax and cleaning agents. These are available at www.nora.com/us.

D. Submit two copies of calcium chloride tests with manufacturer's acceptance of concrete slab as substrate.

E. Shop Drawings:

1. Showing transition details.

2. Showing heat weld joint layouts.

3. Warranty Information

4. Maintenance Data

1.4 QUALITY ASSURANCE

A. Manufacturer: Provide resilient flooring manufactured by a firm with a minimum of 10 years' experience with resilient flooring of type's equivalent to those specified. Manufacturers proposed for use, which are not named in this section, shall submit evidence of ability to meet performance requirements specified not less than 10 days prior to bid date.

1. Provide subfloor preparation products including, membrane, primer, patch, leveler and adhesive systems from one manufacturer to ensure compatibility.

2. Manufacturer must be capable of providing at no additional cost to the County technical maintenance training and technical field service representation.

B. Installer Qualifications: Installer shall be Nora approved for the requirements of the project or INSTALL (International Standards & Training Alliance) resilient certified for the requirements of the project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.

B. Deliver materials sufficiently in advance of installation to condition materials to the required temperature prior to installation.

1.6 PROJECT CONDITIONS

A. Maintain temperature and humidity at service levels or 68° F (20° C), ± 5° F (3° C), and 50% RH ± 10% in areas to receive resilient flooring. Specified temperature shall be maintained at least 48 hours before, during, and 72 hours after installation.

1.7 WARRANTY

A. Provide current, detailed manufacturer's warranty for each flooring product as applicable, including limited wear, defect and conductivity.

1.8 EXTRA MATERIALS

A. Furnish full size units equal to 2 percent of quantity of resilient flooring installed as extra materials. Properly label and package extra materials. Deliver to County's designated storage area.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Flooring:
   i. Nora systems, Inc., Alternate: Mondo or Equal

B. Wall Base:
   i. Johnsonite, Alternate: Roppe or Equal

C. Or Project Engineer/ County approved equal. Submit substitutions per Section 01 25 13.

D. The manufacturer shall be validated according to the Eco-Management and Audit System (EMAS).

E. The manufacturer shall offer a construction waste take back program for the purpose of reducing jobsite waste by taking back their uninstalled waste flooring.

2.2 RESILIENT TILE FLOORING FOR COMMERCIAL TRAFFIC

A.

1. Product Name: noraplan environcare™, Article 2463
2. ASTM Specification: ASTM F1344 Standard Specification for Rubber Floor Tile, defined as Type I and Grade 1
3. Limited Wear Warranty: 5 years
4. Material: nora vulcanized rubber compound 913 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium or mercury
5. Composition: Homogeneous rubber compound with a random scattered design
6. Color: 48 standard colors available; see finish plans.
7. Surface: Smooth
8. Back of Tile: Double-sanded smooth
9. Tile Size: ~24 inches by 24 inches (610mm by 610mm), ASTM F2055, ± 0.018 (± 0.45mm) is required and achieved

10. Squareness: ASTM F2055, ± 0.018 inches (± 0.45mm) is required and achieved
11. Thickness: ~0.12 inches (3mm), ASTM F386, ± 0.005 inches (± 0.127 mm) is required and achieved
12. Dimensional Stability: ASTM F2199, ≤ 0.15% in both directions is required and achieved
13. Flammability: ASTM E648; NFPA 253; NBSIR 75 950, 0.76 is achieved, ≥ 0.45 watts/sq. cm for Class 1 is required
14. Smoke Density: ASTM E662; NFPA 258; NBS, 386 (flaming) and 307 (non-flaming) achieved, < 450 is required
15. CAN/ULC-S102.2: Surface Burning, FSC1 of 125 and SD of 370, achieved
16. Burn Resistance: Resistant to cigarette and solder burns
17. Slip Resistance: ASTM D2047 Static coefficient of friction, Neolite dry 0.99, Neolite wet 0.88 achieved, ≥ .5 is required (not recommended for ramps)
18. Bacteria Resistance: ASTM E2180 and ASTM G21, resistant to bacteria, fungi, and micro-organism activity
19. VOC's: This flooring is GREENGUARD Gold Certified for Low VOC Emissions (formerly GREENGUARD Children & Schools), GREENGUARD Certified for Low VOC Emissions (formerly GREENGUARD Indoor Air Quality Certified), Blue Angel Certified and CA 01350 Compliant
20. Latex Allergies: ASTM D6499, Inhibition Elisa, results are below detection level
21. Sound Absorption: ISO 140 = 10 dB / ASTM E2179 = 42 IIC / ASTM C423 = SAA 0.03 & NRC 0.00 / ASTM E90 = STC 53
22. Sound Generation Level: 67.2 dBA, 68.9 dBC and 20.9 Sones, Independently tested
23. Hardness: ASTM D2240, Shore type "A", 92 achieved, ≥ 85 is required
24. Static Load: ASTM F970, Residual compression of 0.003" with 800 lbs. achieved, ≤ 0.005" with 250 lbs. is required
25. Rolling Load Limit: ≤ 550 lbs. / sq. inch, with no forklift traffic
26. Abrasion Resistance: ASTM D3389, with 500 gram load using an H-18 wheel and 1000 cycles, 0.26 grams weight loss is achieved, ≤ 1.0 is required
27. Elongation: ASTM D412 Modulus @ 10% is 1299 lbs. per sq. inch achieved, ≥ 300 lbs. per sq. inch is required
28. Oil & Grease Resistant: No
29. Heat Resistance: ASTM F1514, Avg. $\Delta E \leq 8.0$ is required, easily achieved with all batches and regular maintenance
30. Light Resistance: ASTM F1515, Avg. $\Delta E \leq 8.0$, easily achieved with all batches and regular maintenance
31. Static Generation: AATCC 134, < 2000 Volts at 20% RH, achieved
32. Thermal Transmission: ASTM C518, R-value 0.77, achieved
33. Cleaning: Cleaned and maintained effectively using water, nora cleaning pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings. Also without using any chemicals that may be

hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic.

34. Shine: Higher shine achieved by buffing without any artificial topical applied coatings

35. Stain Removing: ASTM F925 Suggested Test Reagents plus the common chemicals used in healthcare and education facilities were used. All resulted in no permanent damage to the floor; however, concentrated Nitric Acid, Methylene Blue and Silver Nitrate showed slight discoloration that required the nora pro clean system to remove.

36. Substrate Preparation: nora pro install system products are recommended as required following the nora Installation Guide; this may consist of part, or all, of the following steps depending upon the project specifics:

Step 1 – nora membrane
Step 2 – nora primer
Step 3 – nora leveler
Step 4 – nora patch
Step 5 – nora adhesives, the flooring type, usage and substrate conditions will determine the appropriate adhesive. Please contact your nora representative for specific recommendations.

2.3 RESILIENT SHEET FLOORING FOR COMMERCIAL TRAFFIC

A.

1. Product Name: noraplan environcare™, Article 1463
2. ASTM Specification: ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing, defined as Type 1
3. Limited Wear Warranty: 5 years
4. Material: nora vulcanized rubber compound 913 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium or mercury
5. Composition: Homogeneous rubber compound with a random scattered design
6. Color: 48 standard colors available
7. Surface: Smooth
8. Back of Sheet: Double-sanded smooth
9. Roll Size: ~39.37 feet by 48 inches (12m by 1.22m), ≥ amount specified
10. Thickness: ~0.12 inches (3mm), ASTM F386, ± 0.006 inches (± 0.15mm) is required
11. Dimensional Stability: ASTM F2199, ≤ 0.15% in both directions
12. Flammability: ASTM E648; NFPA 253; NBSIR 75 950, 0.76 achieved, ≥ 0.45 watts/sq. cm for Class 1 is required
13. Smoke Density: ASTM E662; NFPA 258; NBS, 386 (flaming) and 307 (non-flaming) achieved, < 450 is required
14. CAN/ULC-S102.2: Surface Burning, FSC1 of 125 and SD of 370 achieved
15. Burn Resistance: Resistant to cigarette and solder burns

16. Slip Resistance: ASTM D2047 Static coefficient of friction, Neolite dry 0.99 Neolite wet 0.88 achieved, ≥ .5 required (not recommended for ramps)
17. Bacteria Resistance: ASTM E2180 and ASTM G21, resistant to bacteria, fungi, and micro-organism activity
18. VOC's: This flooring is GREENGUARD Gold Certified for Low VOC Emissions (formerly GREENGUARD Children & Schools), GREENGUARD Certified for Low VOC Emissions (formerly GREENGUARD Indoor Air Quality Certified), Blue Angel Certified and CA 01350 Compliant
19. Latex Allergies: ASTM D6499, Inhibition Elisa, below detection level
20. Sound Absorption: ISO 140 = 10 dB / ASTM E2179 = 42 IIC / ASTM C423 = SAA 0.03 & NRC 0.00 / ASTM E90 = STC 53
21. Sound Generation Level: 67.2 dBA, 68.9 dBC and 20.9 Sones, Independently tested
22. Hardness: ASTM D2240, Shore type "A", 92 achieved, ≥ 85 is required
23. Static Load: ASTM F970, Residual compression of 0.003" with 800 lbs. achieved, ≤ 0.005" with 250 lbs. required
24. Rolling Load Limit: ≤ 550 lbs. / sq. inch, with no forklift traffic
25. Abrasion Resistance: ASTM D3389, 500 gram load on H-18 wheel with 1000 cycles, 0.26 gram weight loss achieved, ≤ 1.0 gram is required
26. Elongation: ASTM D412 Modulus @ 10% is 1299 lbs. per sq. inch achieved, ≥ 300 lbs. per sq. inch is required
27. Oil & Grease Resistant: No
28. Heat Resistance: ASTM F1514, Avg. $\Delta E \leq 8.0$ is required, easily achieved with all batches and regular maintenance
29. Light Resistance: ASTM F1515, Avg. $\Delta E \leq 8.0$ is required, easily achieved with all batches and regular maintenance
30. Static Generation: AATCC 134, < 2000 Volts at 20% RH, achieved
31. Thermal Transmission: ASTM C518, R-value 0.77, achieved
32. Cleaning: Cleaned and maintained effectively using water, nora cleaning pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings. Also without using any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic.
33. Shine: Higher shine achieved by buffing without any artificial topical applied coatings
34. Stain Removing: ASTM F925 Suggested Test Reagents plus the common chemicals used in healthcare and education facilities were used. All resulted in no permanent damage to the floor; however, concentrated Nitric Acid, Methylene Blue and Silver Nitrate showed slight discoloration that required the nora pro clean system to remove.
35. Substrate Preparation: nora pro install system products are recommended as required following the nora Installation Guide; this may consist of part, or all, of the following steps depending upon the project specifics:

Step 1 – nora membrane
Step 2 – nora primer
Step 3 – nora leveler
Step 4 – nora patch
Step 5 – nora adhesives, the flooring type, usage and substrate conditions will determine the appropriate adhesive. Please contact your nora representative for specific recommendations.

Note: Exact values may vary due to the test methods and tolerance between batches. The ASTM minimum requirement shall be achieved or exceeded.

2.4 ACCESSORIES

A. Subfloor filler: White premix latex; type recommended by flooring material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Edge Strips: Vinyl type, color as indicated in Construction Documents.

D. Welding Rods for Sheet Flooring: Color matched welding rod.

PART 3 – RESPONSIBILITES

3.1 GENERAL CONTRACTOR RESPONSIBILITIES

A. A building or flooring area that is water tight and fully enclosed from the elements, including roof, windows or facades and doors, that is ready for the flooring installation is required.

B. 1. A concrete subfloor that shall conform to the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required, or as detailed in the nora Installation Guide.

2. A wooden substrate that is not directly in contact with concrete or soil subfloors on or below grade, even if built on sleepers is required. All suspended wood floors shall have an adequate underfloor ventilation system, and a permanently effective vapor retarder shall be placed on the ground beneath the air space.

C. A concrete subfloor that shall be structurally sound, that has finished shrinking, cracking, curling or moving in any way is required.

D. For all concrete substrates on or below grade, a permanent effective vapor retarder with a low permeance (less than 0.1) and having a minimum thickness of 10 mils or meeting the requirements of the latest edition of ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs, shall be placed directly underneath the concrete above the granular fill, and shall be installed as per the manufacturer's written instructions. A letter shall be provided to the end user confirming the

correct products have been used and that it is fully warranted, alternatively nora membrane shall be used as described in 3.01 H.

E. A clean non-burnished concrete surface free from any paint, wax, oil, grease, and film forming curing compounds, silicate penetrating curing compounds, sealing, hardening or parting compounds is required. The surface should not have any alkaline salts, laitance, mold, mildew,carbonization, dust, residual adhesive, chemical adhesive removers or anything that may prevent the appropriate nora pro install products bonding to it. If not then the general contractor should provide the mechanical means to remove them. This could be dustless diamond grinding, bead-blast or similar with a suitable vacuum attachment.

Warning:
Do not sand, dry sweep, dry scrape, drill, saw, bead-blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalt “cutback” adhesive, or other adhesive. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

Various local, state and federal government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable local, state and federal regulations.

The RFCI (Resilient Floor Covering Institute) “Recommended Work Practices for Removal of Resilient Floor Coverings” are a defined set of instructions addressed to the task of removing all resilient floor-covering structures including adhesive and adhesive residues. For more information contact RFCI directly at www.rfci.com or 706-882-3833.

F. Valid tests and acceptable test results shall be provided to the end user and flooring contractor, including documenting with photographs, the location of all tests, recorded % relative humidity levels and temperature of both the concrete subfloor and ambient conditions prior to flooring installation. Testing shall be performed at the correct, controlled ambient service temperature and humidity following the protocol of ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes, using a Wagner Rapid RH probes only. When tested at the correct ambient temperature and humidity the maximum allowable shall be 85%RH for the correct nora® 385, 485, 585 or 685 adhesive or 75%RH for nora® dryfix or nora® stepfix systems.

G. Perform calcium chloride test.

H. If it is not possible to drill into the concrete for any reason as detailed in ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes, please contact the nora Technical Department for other recommendations.

I. Only if it is not possible to provide a concrete substrate with acceptable moisture levels, or that (when appropriate) have a confirmed effective vapor retarder, then nora membrane shall be used as described in 3.02 G. Please note that all additional costs associated with this concrete condition are the responsibility of the general contractor / end user, including any additional requirements for concrete preparation, priming, leveler, patching or labor.

J. A secure storage area that is maintained permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% ± 10% relative humidity, for at least 48 hours prior to and during the application of the flooring, so the flooring contractor can acclimate the flooring materials is required.

K. An installation area that is weather tight and maintained either permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% ± 10% relative humidity, for at least 48 hours prior to, during and 72 hours after the application of the flooring is required.

L. Areas with direct prolonged exposure to sunlight shall be protected with the use of Low E glass doors and windows or facades.

M. Areas of the flooring that are subject to direct sunlight through doors or windows shall have them covered using blinds, curtains, cardboard or similar for the time of the installation and 72 hours after the installation to allow the adhesive to cure. Note: These areas shall be installed using wet adhesives only.

N. Prevent all traffic for a minimum of 12 hours and rolling loads for 72 hours to allow the adhesive to cure. If required, after 12 hours protect the flooring from damage during construction operations using Masonite, plywood or a similar product, ensuring first that the flooring surface is free of all debris. Lay panels so that the edges form a butt joint and tape the joint to prevent both movement and debris entrapment underneath them. Inspect immediately before covering and after removal for final acceptance.

O. Have the flooring cleaned no sooner than 72 hours after the installation using either the nora pro clean or a standard method as detailed in the appropriate nora® Maintenance Guide.

P. Prohibit traffic from area until filler is cured.

Q. Vacuum clean substrate.

R. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

i. Apply, trowel and float filler to leave a smooth, flat and hard surface.

S. The contractor shall perform all required testing and correct any defective pre-existing conditions of the substrate and site conditions prior to the start of installation. Beginning of installation means contractor's acceptance of existing substrate and site conditions. If installation occurs without these preparatory measures and flooring and accessory failure occurs the substrate shall be corrected and all affected finishes shall be replaced by the contractor to the satisfaction of and at no cost to the County.

3.02 FLOORING CONTRACTOR RESPONSIBILITIES

A. Provide trained installers that have at least one of the following:
Approved by nora systems, Inc. for all of the requirements of the project.
INSTALL (International Standards & Training Alliance) certified for the requirements of the project.

B. An effective installation manager, to manage the project, installers, and ensure that all of the required procedures are followed, documented and that the nora Installation Guide is followed.

C. Acclimate the flooring in the secure storage area provided by the general contractor that is maintained permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% relative humidity, for at least 48 hours prior to application.

D. For wooden subfloors American Plywood Association (APA) underlayment grade plywood shall be double sheeted at a suitable thickness (minimum total wood thickness of 1 1/4 inch) to overlay the wooden substrate and installed as detailed in ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring. Please note as plywood will expand and contract due to changes in moisture content and temperature, nora systems, Inc. cannot accept any liability of the plywood joints telegraphing through the finished floor.

E. Perform mat bond tests in each major area (1 per ~1,000 sq. ft.) This shall consist of the proposed subfloor preparation, mitigation and leveling or smoothing products. A detailed method statement is available in the nora Installation Guide available on www.nora.com/us. Do not proceed with the installation until all the results of the bond test are acceptable.

Warning:
Do not sand, dry sweep, dry scrape, drill, saw, bead-blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalt "cutback"

adhesive, or other adhesive. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

Various local, state and federal government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable local, state and federal regulations.

The RFCI (Resilient Floor Covering Institute) "Recommended Work Practices for Removal of Resilient Floor Coverings" are a defined set of instructions addressed to the task of removing all resilient floor-covering structures including adhesive and adhesive residues. For more information contact RFCI directly at www.rfci.com or 706-882-3833.

Clean out and fill or repair any dormant saw cuts and cracks following the appropriate directions of the membrane, leveler or patch sections within the nora Installation Guide. For any expansion (moving) joints, use an industry standard expansion joint assembly. Submit to Project Engineer for approval.

F. When required, use the nora membrane following the directions and requirements detailed within the nora Installation Guide. Provide written confirmation and photographs to the general contractor or end user that the subfloor was prepared correctly prior to the application of the membrane, and that the membrane was applied correctly (without pin-holes) including confirmation of the gallons used and total square feet installed.

G. If required, use nora leveler following the nora Installation Guide. They shall be free of dust, solvents, paint, wax, varnish, oil, grease, asphalt, old adhesives, and other extraneous materials that may interfere with the bond. These shall be completely removed by mechanical means only. Dustless diamond grinding is the preferred method to remove contaminates and bond breakers as it also helps to level the concrete.

H. Prime the subfloor prior to using the leveler. Note: a 1/8 inch minimum thickness is required for the leveler to be considered porous as required when using nora 485 or 685 acrylic adhesives.

I. If nora leveler or patch is used, provide written confirmation and a workmanship warranty that (if required) the area was primed correctly, the leveler had been mixed and applied correctly to the required smoothness and or thickness of the general contractor / end user, or nora Installation Guide.

J. Vacuum floors immediately prior to installing the flooring to remove all loose particles. If required, only use water based sweeping compounds. Do not use any wax or oil based compounds that leave behind a residue that may interfere with the adhesive bond.

K. Install resilient flooring, including but not limited to the following, in accordance with the nora Installation Guide.

L.

1. Do not mix manufacturing batches of a color within the same area. Purchase flooring for entire project prior to installation to ensure flooring is of one dye lot. Mix tile from container to ensure shade variations are consistent. Stop installation immediately if flooring color is inconsistent and notify the Project Engineer and the Manufacturer for direction.

2. Spread only enough adhesive to permit installation of materials before initial set; refer to manufacturer's instructions.

3. Set tile to square grid pattern with all joints aligned and to pattern indicated on drawings.

4. Pattern grain parallel for all units and parallel to width of room. Allow minimum 1/2 full size tile width at room or area perimeter.

5. Lay flooring with seams parallel to length of room to produce minimum number of seams. Provide minimum of 1/3 full roll width. Double cut sheet and continuously heat weld seams.

6. Terminate flooring and provide rubber edge strip at centerline of door openings where adjacent floor finish is dissimilar.

7. Install edge strips at unprotected or exposed edges, and where flooring terminates.

8. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

9. Install flooring in pan type floor access covers. Maintain floor pattern.

10. Install flooring under movable partitions and under cabinetry without interrupting floor pattern.

11. Install feature strips, edge strips, and floor markings where indicated. Fit joints tightly.

12. Allow for 25 percent accent color pattern unless notes otherwise.

13. Heat weld all seams of sheet flooring.

14. Do not install resilient flooring over building expansion joints.

15. Do not install defective or damaged resilient flooring.

16. Lay resilient flooring with arrows in the same direction (excluding borders).

17. Install resilient flooring without voids at seams. Lay seams together without stress.

18. Cut/scribe resilient flooring neatly at perimeter and obstructions.

19. Extend resilient flooring into reveals, closets, and similar openings.

20. Remove excess adhesive immediately.

21. Install reducer strips at exposed edges.

22. Spread only enough adhesive to permit installation of materials before initial set.

23. Set flooring in place; press with heavy roller to attain full adhesion.

24. Smooth and ease all flooring arc patterns; sharp and jagged seams are not acceptable. Notify Project Engineer immediately of any flooring pattern discrepancies and/ or variations. If pattern is determined unacceptable by Project Engineer, flooring to be replaced at no additional cost to the County.

25. Install Flooring per Construction Documents in accordance with manufacturer's Installation Guide.

M. Install wall base per Construction Documents in accordance with manufacturer's Installation Guide. Install in longest practical lengths.

1. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.

2. Miter internal corners.

2. Field wrap external corners with longest pratical lengths. "V" cut back surface to 2/3 its thickness.

3. Install base on solid backing. Bond tight to wall and floor surfaces.

4. Scribe and fit to door frames and other interruptions.

5. Install base at casework where occurs in rooms scheduled for rubber base.

6. Install integral coved base in flash-coved method. Install cap trim at top of base where edge of flooring is exposed. Install radiused backing fillet at wall and floor juncture. Heat weld all seams.

N. Install resilient accessories in accordance with the nora Installation Guide.

O. noraplan SEAMLESS FLOORING INSTALLATION (when required). Rout seams and weld together with coordinated colored nora heat welding rod or with coordinated colored nora cold weld in accordance with the nora Installation Guide.

P. FLASH COVING OF SHEET GOOD (when required). Extend flooring up the wall using the boot flash coving method, to the required height. Provide cove stick and suitable capping strip. All internal and external vertical seams, or as specified shall be cold welded with coordinated colored nora cold weld. Note: Do not heat weld the vertical seams.

Q. Touch-up and repair any minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

3.3 MANUFACTURER RESPONSIBILITIES

A. Provide a one-year warranty against defects in manufacturing of all products supplied. Provide limited wear warranty for the flooring supplied, as detailed per product. Provide a nora pro install system warranty upon receipt of the required test results and documentation. Contact the nora® Technical Department for details.

B. Adherence to the Quality Management System approved by Lloyd's Register Quality Assurance to the Quality Management System Standard ISO 9001:2000.

C. Provide flooring that shall contain no polyvinyl chloride or plasticizers.

D. ISO 14001 Environmental Management Systems certification.

E. Provide training for the installers at a nora® Technical Academy; contact the nora Technical Department for details and availability.

F. Provide a pre- and mid installation site walk to discuss installation of flooring with contractor to ensure final end result.

G. Provide an effective surface moisture mitigation membrane that has three (3) levels of protection (depending on %RH moisture content of the concrete), and

that is in compliance (46 grams/liter) with SCAQMD Rule 1113, < 100 grams/liter.

H. Provide a water based primer, that is suitable for both porous and non-porous substrates including nora membrane, and that is in compliance (92 grams/liter) with SCAQMD Rule 1113, < 100 grams/liter.

I. Provide a self-smoothing Portland cement based leveler, that can pumped or barrel mixed with water and be used at a minimum of 1/8 inch that is in compliance (0 grams/liter) with SCAQMD Rule 1168, < 50 grams/liter.

J. Provide a Portland cement based patching compound that can be used from a feather edge to 1 inch in one application and is in compliance (0 grams/liter) with SCAQMD Rule 1168, < 50 grams/liter.

K. Provide flooring that shall contain no halogens.

L. Provide flooring surfaces that shall be easily cleaned and not require coatings and stripping, or use chemicals that may be hazardous to human health.

M. Provide flooring that shall be free of anything known to be teratogenic, mutagenic or carcinogenic.

N. Provide adhesives that are in compliance (0 grams/liter) with SCAQMD Rule 1168, < 60 grams/liter Standard for Rubber Floor Adhesives.

END OF SECTION

SECTION 09 67 23
RESINOUS FLOORING AND WALL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Included in this Section: (Intake Restroom & Shower Stalls)
   1. Urethane-Based Resinous Flooring.
      a. System characteristics, components and physical properties.
   2. Epoxy-Based Resinous Flooring.
      a. System characteristics, components and physical properties.
   3. Epoxy-Based Resinous Wall Systems.
      a. System characteristics, components and physical properties.
   4. Accessories.

B. Related Sections:
   1. Section 03 30 00 - Cast-in-Place Concrete.
   2. Section 04 22 00 - Concrete Masonry Unit.
   3. Section 07 19 00 - Water Repellents.

1.2 REFERENCES

A. ASTM C109 - Standard Test method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens).

B. ASTM C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortars, Grouts and Monolithic Surfacings.

C. ASTM C348 - Standard Test Method for Flexural Strength of Chemical-Resistant Mortars.

D. ASTM C413 - Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

E. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

F. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing and Polymer Concretes.

G. ASTM C580 - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes.

H. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning Plastics in a Horizontal Position.

I. ASTM D638 - Standard Test Method for Tensile Strength of Plastics.

J. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine (Note: This test is not appropriate for surfaces that will frequently be subjected to wet conditions).

K. ASTM D2240 - Standard Test Method for Rubber Property-Durometer Hardness.

L. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

M. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

N. ASTM D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

O. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.

P. ASTM E84 - Standard Test Method for Burning Characteristics of Building Materials.

Q. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emissions Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

R. ASTM F2170 - Standard Test method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

S. ANSI/NFSI - B101.0 Walkway Surface Auditing Procedure for the measurement of Walkway Slip Resistance as Measured by the BOT 3000 Testing Device for Wet and Dry Surfaces (Note: Surfaces of products to be applied shall be tested under wet and dry conditions). In accordance with ANSI/NFSI the following “Traction Levels” and “Risk Classifications” shall be applied to all walking surfaces with regards to slip resistance and their risk factors:
    1. Traction Levels:
        a. High Traction Level (Risk Class “C”) (.60+) SCOF for areas subject to frequent wet conditions or other contaminants.
        b. Moderate Traction Level (Risk Class “B”) (0.40 – 0.60) SCOF for areas subject to intermittent wet conditions or other contaminants.
        c. Low Traction Level (Risk Class “A”) (<.040) SCOF for areas normally dry and free of contaminants.
    2. Risk Classes:
        a. Risk Class “A”: Walkways Normally Dry and Free of Contaminants.
            1) Test Method: Dry SCOF using a leather sensor (slider).
            2) Test in four directions with a minimum of 3 sample sites per zone.
            3) Criteria: Dry SCOF ≥0.5 per ANSI/ASSE A1264.2-(most current version) Section E11.2.
        b. Risk Class “B”: Walkway Areas Occasionally Wet or Contaminated.
            1) Test Methods: #1. Perform test method for Risk Class “A” as above.
            2) #2. Perform wet SCOF test using a Neolite® sensor.
            3) Test in four directions with a minimum of 3 sample sites per zone.
            4) Criteria: Wet SCOF ≥0.60 per ANSI/NFSI B101.1-(most current version).

c. Risk Class “C”: Walkway Areas Normally Wet and Where Shoes Are Normally Worn.
   1) Perform wet SCOF test using a Neolite® sensor.
   2) Test in four directions with a minimum of 3 sample sites per zone.
   3) Criteria: Wet SCOF ≥ 0.60 per ANSI/NFSI B101.1-(most current version).

T. California Health and Safety Code, Part 7. California Retail Food Code for materials to be used in food service areas.

U. ANSI 137.1 – Dynamic Coefficient of Friction (DCOF) Standards. Products must achieve a >.42 DCOF on wet surfaces, per the BOT 3000 testing method.

V. CSP – Concrete Surface Profile Scale by the International Concrete Repair Institute.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 00.

B. Product Data: For each type of product indicated. Include manufacturer’s technical data, application instructions, and recommendations for each resinous flooring component required.
   1. For adhesives, sealants, and chemical-bonding compounds include printed statement of VOC content.
   2. For resinous flooring systems include printed statement of VOC content.

C. Samples for Initial Selection: For each type of exposed finish required.

D. Samples for Verification: For each resinous flooring system required, 6 inches (150 mm) square, applied to a rigid backing by Installer for this Project.

E. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.

F. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

G. Material Certificates: For each resinous flooring component, signed by manufacturer.

H. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installer to provide proof of the successful completion of a minimum of three comparable jobs of similar size and scope within a 100 mile radius of the job site within the past five years. Installer also to provide letter from manufacturer as an acceptable installer of manufacturer’s product.

B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, aggregates, grouting coats, and topcoats, through one source from a single manufacturer. Provide secondary materials, including patching

and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

C. Resinous flooring must be formaldehyde free and low VOC requirement.

1.5 REGULATORY REQUIREMENTS

A. Slip Resistance: Finish flooring must comply with ANSI/NFSI B101.0, B101.1, B101.3; ANSI 137.1; ASTM D2047.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

PART 2 PRODUCTS

2.1 EPOXY-BASED RESINOUS FLOORING SYSTEM

A. Manufacturers/Products: Subject to compliance with requirements, provide one of the following:
1. Stonhard, Inc.; Stoneclad GS with StonKote GS4 finish coat.
2. Crossfield Products Corp.; Dex-O-Tex Cheminert K with Posi-Tred O finish coat.
3. Dur-A-Flex Inc.; Shop Floor with Ultra-Clear finish coat.
4. Neogard; KitchenGard including finish coat.

B. System Characteristics:
1. Color and Pattern: As selected by the Architect of Record from manufacturer's full range.
2. Wearing Surface: Medium texture.
3. Complete System: All components to be compatible and provided by one manufacturer as one complete system.
4. Integral Cove Base: 6 inches high
5. Overall System Thickness: 1/4 inch nominal.

6. VOC Content: Less than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. System Components: Manufacturer's standard components that are compatible with each other and as follows:
   1. Body Coat:
      a. Resin: Epoxy.
      b. Formulation Description: 100 percent solids.
      c. Application Method: Troweled or screeded.
         1) Thickness of Coats: 1/4 inch (6.4 mm) minimum.
         2) Number of Coats: One.
      d. Aggregates: Manufacturer's standard.
   2. Primer: Type recommended by manufacturer for substrate and body coat(s) indicated.
      a. Formulation Description: 100 percent solids.
   3. Waterproofing Membrane; For Above-Grade Flooring Locations: Type recommended by manufacturer for substrate, primer and body coat(s) indicated.
      a. Formulation Description: 100 percent solids.
   4. Top Coat: Chemical-resistant sealing or finish coat(s).
      a. Resin: Manufacturer's standard.
      b. Formulation Description: 100 percent solids.
      c. Type: Clear.
      d. Finish: Matte.
      e. Number of Coats: One.
      f. Minimum Thickness: 4 mils.
      g. Texture: Light.

D. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

Property	Test Method	EPOXY TOP COAT	BODY COAT
Hardness (Shore D)	ASTM D2240	75-80	70-75
Compressive Strength	ASTM C579 ASTM C109	10,000 psi	 4,000 psi
Tensile Strength	ASTM D638 ASTM C307	1,600 psi	 800 psi
Flexural Strength	ASTM C580 ASTM C348	4,000 psi	1,200 psi 1,200 psi
Bond Strength to Concrete (* Concrete failure)	ASTM D4541	>400 psi	> 400 psi
Impact Resistance	ASTM D2794	>160 in/lbs	
Water Absorption	ASTM C413	<0.5%	
Flammability	ASTM D635	Self-Extinguishing	
Flame Spread/NFPA 101	ASTM E84	Class A	
Slip Resistance	ASTM F1679	0.66	

2.2 EPOXY-BASED RESINOUS WALL SYSTEM – 'EPOXY PAINT'

A. Manufacturers/Products:
   1. Epoxy Mortar Wall System.
      a. Stonhard Inc.; Stonglaze VS.
      b. Dur-A-Flex Inc.; Dur-A-Wall.
      c. Crossfield Products; Dex-O-Tex Wallcote E.

B. System Characteristics:
   1. Color and Pattern: As selected by the Architect of Record from manufacturer's full range of colors.
   2. Wearing Surface: Manufacturer's standard orange-peel texture.
   3. Overall System Thickness: 1/8 inch minimum, 1/4 inch maximum.
   4. VOC Content: Less than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   5. Acceptable Substrates:
      a. Concrete Masonry Units.
      b. Pre-Cast Concrete.
      c. Poured-in-Place Concrete.

C. System Components: Manufacturer's standard components that are compatible with each other and as follows:
   1. Waterproofing Membrane; where indicated on Drawings or where waterproofing is required:
      a. Type recommended by manufacturer for substrate and primer and body coat(s) indicated.
      b. Formulation Description: 100 percent solids.
   2. Primer: Type recommended by manufacturer for substrate and body coat(s) indicated.
      a. Formulation Description: 100 percent solids.
   3. Body Coat(s); as required for application on masonry and cementitious backing board:
      a. Type recommended by manufacturer for substrate and top coat system indicated.
      b. Resin: Epoxy.
      c. Formulation Description: 100 percent solids.
      d. Application Method: Troweled.
         1) Thickness of Coats: 1/8 inch to 1/4 inch.
         2) Number of Coats: Manufacturer's Standard.
      e. Aggregates: Manufacturer's Standard.
   4. Topcoat: Chemical-resistant sealing or finish coat(s).
      a. Resin: Manufacturer's standard.
      b. Formulation Description: 100 percent solids.
      c. Type: Clear.
      d. Finish: Matte.
      e. Number of Coats: Two.
      f. Thickness: 10-12 mils.

g. Texture: Smooth.

D. System Physical Properties: Provide resinous wall system with the following minimum physical property requirements when tested according to test methods indicated:

Property	Test Method	EPOXY TOP COAT
Hardness (Shore D)	ASTM D2240	75-80
Compressive Strength	ASTM C579 ASTM C109	6,500 psi
Impact Resistance	ASTM D2794	>160 in/lbs.
Water Absorption	ASTM C413	<0.5%
Flammability	ASTM D635	Self-Extinguishing
Flame Spread/NFPA 101	ASTM E84	Class A

2.3 ACCESSORY MATERIALS

A. Patching and Fill Material: Resinous product of, or approved by, resinous flooring manufacturer and recommended by manufacturer for application indicated or as needed.

B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.
1. Sealants to comply with Section 07 90 00 – Joint Protection.
2. Use sealants that have a VOC content of 250 gram/liter or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Crack Treatment: Products of, or approved, by resinous flooring manufacturer.
1. For filling tension/shrinkage cracks: Epoxy-patching mortar.
2. For isolating dynamic cracks: Flexible resin with fiberglass fabric reinforcement.

D. Edge-protection and transition at resilient and tile floors. Provide tranisition profiles: Acceptable Manufacturer: Schluter Systems, L.P.

PART 3 EXECUTION

3.1 PREPARATION

A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral pH substrate, free of carbonization and dusting, for resinous flooring application.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
1. Roughen concrete substrates as follows:

a. Shot-blast surfaces with apparatus that abrades concrete surface to CSP-4 to 5 minimum or higher as recommended by manufacturer, contains dispensed shot within apparatus, and recirculates shot by vacuum pickup.

2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
3. Testing: Perform tests on the concrete substrates prior to installation of resinous systems as recommended by manufacturer and as follows:
   a. Moisture and Vapor Testing: Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions by performing the following tests.
      1) Anhydrous calcium chloride test ASTM F 1869-98. Acceptable substrates must have vapor/moisture emission rate of 3 lbs of water/1000 sf of concrete surface, or less in 24 hours for urethane and epoxy-based systems.
      2) Relative humidity test using in-situ probes, ASTM F 2170. Acceptable substrates must have a maximum 75 percent relative humidity level measurement.
      3) Plastic sheet test, ASTM D4263. Acceptable substrate must indicate absence of moisture.
      4) If results of vapor drive and moisture tests above exceed limits set forth, then Architect of Record must be notified and advised of the possible installation of a vapor/moisture emission control system that has been approved by resinous flooring manufacturer. Install moisture emission control system as approved by Architect of Record and in accordance with flooring manufacturer's recommendations prior to application of resinous flooring and wall systems.
   b. Alkalinity and Adhesion Testing: Verify that substrates have neutral pH and that resinous flooring and wall systems will adhere to them.
      1) Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.

C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.

E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations.

3.2 APPLICATION

A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
   1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
   2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.

3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations. Apply joint sealant to comply with manufacturer's written recommendations.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply waterproofing membrane, where indicated, in manufacturer's recommended thickness. Apply waterproofing membrane to integral cove base substrates.

D. Apply reinforcing membrane to substrate cracks.

E. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, and top coating of cove base. Round internal and external corners.

F. Apply self-leveling slurry body coat in thickness indicated for flooring system. Broadcast aggregates at rate recommended by manufacturer and, after resin is cured, remove excess aggregates to provide surface texture indicated.

G. Apply troweled or screeded body coat(s) in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness.

H. Apply grout coat, of type recommended by resinous flooring manufacturer to fill voids in surface of final body coat and to produce wearing surface indicated.

I. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.3 FIELD QUALITY CONTROL

A. Core Sampling: At the direction of the Architect of Record and at locations designated by the Architect of Record, take 1 core sample per 1000 sf. (92.9 sm) of resinous flooring, or portion of, to verify thickness. For each sample that fails to comply with requirements, take two additional samples. Repair damage caused by coring and correct deficiencies.

B. Material Sampling: The Architect of Record may at any time and any number of times during resinous flooring application require material samples for testing for compliance with requirements.
   1. The Architect of Record will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
   2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
   3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with

unacceptable materials, and reapply flooring materials to comply with requirements.

3.4 CLEANING AND PROTECTION

A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION

SECTION 09 90 00
PAINTING AND COATING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Paint materials.
   2. Surface preparation.
   3. Interior painting and finishing schedule.
   4. NOTE: Refer to Section 09 67 23 for Epoxy Resinous Flooring and Epoxy Wall and Ceiling Paint/Coating for Intake Restroom and Showers.

1.2 REFERENCES

A. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.

1.3 DEFINITIONS

A. Paint: Paint system materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats.

B. Exposed: Visible in the completed Work.

C. Unexposed: Concealed in the completed Work.

1.4 SYSTEM DESCRIPTION

A. Surface preparation and finish painting of interior and exterior surfaces and miscellaneous components.

1.5 SUBMITTALS

A. Submit in accordance with Section 01 33 00. In addition to the number of copies required by Section 01 33 00, submit two extra copies for review County's air pollution control consultant. The submittals must include the initial and subsequent submittals.

B. Samples:
   1. Samples of manufacturer's standard colors for color selection.
   2. Samples of Selected Colors and Finishes:
      a. Three sets of samples, using materials accepted for the Project, of each color and paint finish selected by the Architect of Record.

b. Prepare on 8 inch by 10 inch hardboard panels in a stair step manner so all required coats show.
c. Label and identify each sample as to location and application.

3. Resubmit samples as required until required sheen, color, and texture are achieved.
4. Acceptance of samples for color, gloss, and texture must in no way waive material quality requirements.

C. Product Data: For each type of product indicated.
1. For paints include printed statement of VOC content and chemical components.

D. For consideration of products of manufacturers other than those named, in addition to the information required to be submitted for substitutions under the provisions of Division 0, for each product submit current (within the last 6 months) test data from a recognized independent testing laboratory, accompanied by a letter stating that the proposed products are equal to or better than those specified.

E. Manufacturer's application instructions.

1.6 QUALITY ASSURANCE

A. Paint materials not otherwise specified must be products of one manufacturer regularly producing materials of types specified.

1.7 FIELD SAMPLES

A. Provide field samples in accordance with Section 01 45 00.

B. Construct field sample for each type of finish on each substrate.

C. Paint a sample panel for each color selected.

D. Large Surface Areas, More than 40 sf: Apply to entire surface in one plane, terminating only at corners.

E. Small surface Areas, 40 sf or Less: Apply to minimum 4 sf.

F. Construct field sample using surface preparation method, material, and application of material as specified.

G. Review:
1. Request in writing the Architect of Record's review after permanent lighting is in operation where field sample has been constructed.
2. At the option of the Architect of Record, temporary lighting providing illumination of the same intensity, color, and character may be utilized for review of field samples.
3. The Architect of Record will review field sample no later than four days following receipt of request.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver paints and stains ready mixed in labeled, tightly covered containers to the Project site.

B. Store materials on pallets or skids in clean, dry, well-ventilated areas, away from heat, sparks, flame, and direct rays of sunshine; maintain storage areas free from fire hazard.

C. Remove used rags and hazardous waste materials at end of work each day, unless properly stored in metal containers with tightly-fitting metal covers.

D. Frequently remove accumulated waste materials.

1.9 PROJECT CONDITIONS

A. Comply with manufacturer's recommendations for environmental conditions under which paint and paint systems must be applied.

B. Ensure adequate ventilation during interior painting.

C. Do not apply exterior paint in rain, snow, fog or mist, when temperature is below 45 degrees F, or when relative humidity is above 50 percent.

1.10 WARRANTY

A. Provide warranty under provisions of Section 01 78 00.

B. Colors of surfaces painted as part of the work of this Section must, at the end of one year, have remained free from serious fading.

C. Paint must have its original adherence at the end of one year and there must be no evidence of blisters, running, peeling, scaling, chalking, streaks, or stains at the end of this period.

D. Washing with alkali-free soap and water must remove surface dirt from painted surfaces without producing deteriorating effects.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer:
1. Dunn Edwards Paint Co.
2. Fuller O'Brien Paint Company.
3. ICI Paints.
4. Frazee.

2.2 MATERIALS - GENERAL DESCRIPTION

A. Wood Filler: Paste filler recommended by manufacturer for wood type used, in color according to color of stain finish scheduled or selected.

B. Cementitious Filler: Nonshrink formulation; white Portland cement with fine silicate aggregate, zinc-oxide pigment, and reinforcing chemical binder as approved.

C. General Purpose Filler: Standard spackling compound or gypsum wallboard joint compound or latex patching compound; for patching plaster, gypsum wallboard, and wood surfaces to receive opaque paint finishes.

D. Thinner: As recommended by each manufacturer for his respective product.

E. Equipment: Provide scaffolding, staging, drop cloths, covers, brushes, rollers, and spraying and other equipment of the type, grade, and size required for proper execution of the Work.

2.3 MISCELLANEOUS SURFACE PREPARATION MATERIALS

A. Galvanized Metal Chemical/Acid Etch:
   1. Dunn-Edwards Galva-Etch Etching Liquid, GE 123.

2.4 PAINT MATERIALS

A. General; Indoor Environmental Quality:
   1. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24), or as specified in Section 01 81 13, whichever is more restrictive. These requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop.
      a. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
      b. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
      c. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
      d. Floor Coatings: VOC not more than 100 g/L.
      e. Shellacs, Clear: VOC not more than 730 g/L.
      f. Shellacs, Pigmented: VOC not more than 550 g/L.
      g. Stains: VOC not more than 250 g/L.
      h. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.

B. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions, or as specified in Section 01 81 13, whichever is more restrictive. These requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop.

1. Aromatic Compounds: Paints and coatings must not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

2. Restricted Components: Paints and coatings must not contain any of the following:
   a. Acrolein.
   b. Acrylonitrile.
   c. Antimony.
   d. Benzene.
   e. Butyl benzyl phthalate.
   f. Cadmium.
   g. Di (2-ethylhexyl) phthalate.
   h. Di-n-butyl phthalate.
   i. Di-n-octyl phthalate.
   j. 1,2-dichlorobenzene.
   k. Diethyl phthalate.
   l. Ethylbenzene.
   m. Formaldehyde.
   n. Hexavalent chromium.
   o. Isophorone.
   p. Lead.
   q. Mercury.
   r. Methyl ethyl ketone.
   s. Methyl isobutyl ketone.
   t. Methylene chloride.
   u. Naphthalene.
   v. Toluene (methylbenzene).
   w. 1,1,1-trichloroethane.
   x. Vinyl chloride.

C. Primer/sealer for interior and exterior concrete masonry must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic and epoxy resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 34 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: Acrylic/epoxy.

D. Primer for interior and exterior non-ferrous metal must contain or have properties which are equivalent to the following:
   1. Alkyd Option:
      a. Vehicle: Alkyd resins, thinners and additives.
      b. Pigments: Titanium dioxide and reinforcing pigments.
      c. Solids by Volume: 44 percent minimum.
      d. Solvent Type: Paint thinner.
      e. Resin Type: Alkyd.

2. Acrylic Option:
    a. Vehicle: Acrylic resins, water and additives.
    b. Pigments: Titanium dioxide, reinforcing, and corrosion inhibiting pigments.
    c. Solids by Volume: 38 percent minimum.
    d. Solvent Type: Waterborne.
    e. Resin Type: 100 percent acrylic.

E. Block filler for interior and exterior concrete masonry must contain or have properties which are equivalent to the following:
1. Exterior (medium aggregate):
    a. Vehicle: Acrylic resins, water and additives.
    b. Pigments: Titanium dioxide and reinforcing pigments.
    c. Solids by Volume: 48 percent minimum.
    d. Solvent Type: Waterborne.
    e. Resin Type: 100 percent acrylic.
2. Interior (smooth aggregate):
    a. Vehicle: Acrylic resins, water and additives.
    b. Pigments: Titanium dioxide and reinforcing pigments.
    c. Solids by Volume: 51 percent minimum.
    d. Solvent Type: Waterborne.
    e. Resin Type: 100 percent acrylic.

F. Primer for interior and exterior ferrous metal must contain or have properties which are equivalent to the following:
1. Vehicle: Alkyd resins and oils, thinners and additives.
2. Pigments: Titanium dioxide, rust inhibitive and reinforcing pigments.
3. Solids by Volume: 56 percent minimum.
4. Solvent type: Paint thinner.
5. Resin Type: Alkyd.

G. Primer for interior wood surfaces, and for gypsum wallboard surfaces receiving an epoxy coating, must contain or have properties which are equivalent to the following:
1. Vehicle: Acrylic resins, water and additives.
2. Pigments: Titanium dioxide and reinforcing pigments.
3. Solids by Volume: 43 percent minimum.
4. Solvent Type: Waterborne.
5. Resin Type: 100 percent acrylic.

H. Fire retardant alkyd undercoater designed to provide excellent sealing, adhesion, and enamel holdout; primer on new wood surfaces and an intermediate coat on previously sealed wood surfaces; must contain or have properties which are equivalent to the following:
1. Vehicle: Alkyd resins, thinners and additives.
2. Pigments: Titanium dioxide (TiO_2) and reinforcing pigments.
3. Solids by Volume: 54 percent ±2 percent minimum.
4. Solvent Type: Paint Thinner.
5. Resin Type: Alkyd.

I. Sealer for interior veneer plaster must contain or have properties which are equivalent to the following:
   1. Vehicle: Alkyd resins, thinners and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 56 percent minimum.
   4. Solvent Type: Paint thinner.
   5. Resin Type: Alkyd.

J. Sealer for interior gypsum board receiving an acrylic paint finish must contain or have properties which are equivalent to the following:
   1. Vehicle: Vinyl acrylic resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 37 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: Acrylic copolymer.

K. Gloss paint for interior and exterior ferrous and non-ferrous metals must be formulated for interior and exterior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic resins, water and additives.
   2. Pigments: Titanium dioxide.
   3. Solids by Volume: 33 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: 100 percent acrylic.

L. Low-sheen paint for exterior wood fascia and trim must be formulated for exterior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 40 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: 100 percent acrylic.

M. Semi-gloss paint for interior and exterior ferrous and non-ferrous metals, and interior wall and ceiling surfaces where indicated, must be formulated for interior and exterior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic resins, water and additives.
   2. Pigments: Titanium dioxide.
   3. Solids by Volume: 34 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: 100 percent acrylic.

N. Flat paint for exterior concrete, concrete masonry, and cement plaster wall surfaces must be formulated for exterior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 35 percent minimum.

4. Solvent Type: Waterborne.
5. Resin Type: 100 percent acrylic.

O. Line striping coating for exterior asphalt and concrete roads, walkways, curbs, parking lots, and other areas as indicated, must be formulated for exterior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic and epoxy resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 39 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: Acrylic/epoxy.

P. Eggshell paint for interior wall and ceiling surfaces where indicated, and miscellaneous interior wood components where indicated must be formulated for interior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 40 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: 100 percent acrylic.

Q. Eggshell paint for interior ferrous and non-ferrous metals, and interior wall and ceiling surfaces where indicated, must be formulated for interior and exterior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 35 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: 100 percent acrylic.

R. Semi-gloss paint for interior wall and ceiling surfaces where indicated, and miscellaneous interior wood components where indicated must be formulated for interior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Acrylic resins, water and additives.
   2. Pigments: Titanium dioxide.
   3. Solids by Volume: 37 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: 100 percent acrylic.

S. Latex flat enamel for interior wall and ceiling surfaces where indicated must be formulated for interior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Vinyl acrylic resins, water and additives.
   2. Pigments: Titanium dioxide and reinforcing pigments.
   3. Solids by Volume: 42 percent minimum.
   4. Solvent Type: Waterborne.
   5. Resin Type: Acrylic copolymer.

T. Gloss enamel paint for interior wall and ceiling surfaces where indicated, and for mechanical and electrical equipment and/or enclosures, must be formulated for interior and exterior applications and must contain or have properties which are equivalent to the following:
   1. Vehicle: Alkyd resins, thinner and additives.
   2. Pigments: Titanium dioxide.
   3. Solids by Volume: 52 percent minimum.
   4. Solvent Type: Paint thinner.
   5. Resin Type: Alkyd.

U. Gloss and semi-gloss epoxy coatings for interior wall and ceiling surfaces must be two component, and must contain or have properties which are equivalent to the following:
   1. Vehicle: Epoxy and polyamine resins, water and additives.
   2. Solids by Volume: 50 percent minimum.
   3. Solvent Type: Waterborne.
   4. Resin Type: Epoxy.

V. Fire Retardant Alkyd Semi-Gloss Enamel for telecommunications terminal backboard (TTB).
   1. Vehicle: Alkyd resins, thinner and additives.
   2. Pigments: Titanium dioxide (TiO_2) and reinforcing pigments.
   3. Solids by Volume: 55 percent ±2 percent minimum.
   4. Solvent Type: Paint Thinner.
   5. Resin Type: Alkyd.

W. Additional surface preparation and paint materials required by other Sections and not listed herein must be manufacturer's best quality for the intended purpose.

2.5 PAINT MATERIALS FOR EXTERIOR USE

A. Primers and Undercoats:

	Dunn-Edwards Product / Number	
Product		
Acrylic Masonry Primer/Sealer	Eff-Stop	W 709
Acrylic Multi-Purpose Primer	M-P Prime	W 713
Acrylic Wood Primer (Exterior)	E-Z Prime	W 708
Concrete Block Filler, Medium	Blocfil	W 304
Galvanized/Aluminum Primer	Galv-Alum	QD 43-7
Two Component Waterborne Epoxy Masonry Primer	Super-Loc	w 718
White Alkyd Corrosion Inhibitive Primer	Corrobar	43-5

B. Paint Finish Coats:

	Dunn-Edwards Product / Number	
Product		
100 percent Acrylic Gloss Paint (Int./Ext.)	Permagloss	W 960
100 percent Acrylic Low Sheen Paint (Exterior)	Enduracryl	W 705
100 percent Acrylic Semi-Gloss Paint (Int./Ext.)	Permasheen	W 901
100 percent Acrylic Wood and Masonry Flat Paint (Ext.)	Evershield	W 701

Line Striping Coating	Vin-L-Stripe	W 801-1

2.6 PAINT MATERIALS FOR INTERIOR USE

A. Primers and Undercoats:

Product	Dunn-Edwards Product / Number	
Acrylic Enamel Undercoater (Interior)	Unikote	W 707
Acrylic Masonry Primer Sealer	Eff-Stop	W 709
Acrylic Multi-Purpose Primer	M-P Prime	W 713
Alkyd Pigmented Sealer (Interior)	Alkylseal	E 28-1
Concrete Block Filler, Smooth	Blocfil	W 305
Galvanized/Aluminum Primer	Galv-Alum	QD 43-7
Pigmented Sealer (Interior)	Vinylastic	W 101
Two Component Epoxy Masonry Primer	Super-Loc	W 718
White Alkyd Corrosion Inhibitive Primer	Corrobar	43-5

B. Paint Finish Coats:

Product	Dunn-Edwards Product / Number	
100 percent Acrylic Eggshell Paint (Interior)	Decosheen	W 440
100 percent Acrylic Eggshell Paint (Int./Ext.)	Permashell	W 940
100 percent Acrylic Gloss Paint (Interior/Exterior)	Permagloss	W 960
100 percent Acrylic Semi-Gloss Paint (Interior)	Decoglo	W 450
100 percent Acrylic Semi-Gloss Paint (Int./Ext.)	Permasheen	W 901
Latex Flat Enamel (Interior)	Durawall	W 3447
Quick-Dry Alkyd Gloss Enamel	Enduratec	QD 42-8

2.7 COLORS

A. The COUNTYRepresentative will select the finish colors and textures and determine the basic colors of surfaces to be painted or stained.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that conditions are satisfactory for the application of paint and stain finishes.

B. Before commencing paint applications, have an authorized representative of paint manufacturer inspect work areas and report his findings.

C. If unsatisfactory conditions exist, do not commence the application until such conditions have been corrected.

D. Application of first coat of finish constitutes acceptance of surface conditions and responsibility for ultimate finish.

3.2 PREPARATION

A. Rooms and spaces must be broom-clean before commencement of paint application.

B. Surfaces to be finished must be dry, clean, smooth, and free from rust, scale, oil, grease, grit, frost, sap, and other foreign matter. Shellac and seal marks which might bleed through surface finish.

C. Protect nameplates, switchplates, instruments, gauges, stainless steel, aluminum, and other surfaces which are not to be painted by masking or other means.

D. Hardware, hardware accessories, lighting fixtures, and similar items in place must be sufficiently protected or removed prior to painting, and replaced upon completion of painting of each space.

E. Disconnect heating and other equipment adjacent to walls, and move to permit wall surfaces to be painted. Following completion of painting, replace and reconnect equipment.

F. Locate and install scaffolding and staging to avoid interference with the Work of other Sections.

G. Wood:
   1. Clean soiled surfaces. Sand smooth and dust clean. Neatly fill nail holes, cracks, and depressions with filler. When dry, sand flush and smooth.
   2. Before finishing, exposed portions must have handling marks or effects of exposure to moisture removed with a thorough, final sanding over surfaces of the exposed portions, using at least 150 grit or finer sandpaper, and must be cleaned before applying sealer or finish.

H. Gypsum Wallboard:
   1. Fill narrow, shallow cracks and small holes with general purpose filler.
   2. Rake deep, wide cracks and deep holes. Fill with thin layers of general purpose filler.
   3. Allow fill material to dry.
   4. Sand smooth after drying. Do not raise nap of paper on wallboard.

I. Metals:
   1. Remove mill scale, rust, corrosion, and other foreign matter by wire brushing, scraping, sandblasting, or solvent, as required to produce a clean, smooth surface.
   2. Clean oil, grease, and dust from surfaces using mineral spirits.
   3. Touch up chipped or abraded areas in shop primer using primer compatible with existing.
   4. Pretreat galvanized metal with phosphoric acid etch or vinyl wash. Apply primer within four hours of acid etching.

J. Ductwork Interiors: Clean visible portion of ductwork interiors with solvent and wipe clean.

K. Cement and/or Gypsum Plaster: Using the PH pencil test for surface alkalinity, verify that the PH of the surface to be painted is within manufacturer's recommended PH range prior to application. Correct unsatisfactory conditions per paint manufacturer's recommendations.

3.3 APPLICATION

A. Do not apply initial coating until moisture content of surface, as tested with a moisture meter, is within limitations recommended by the coating manufacturer.

B. Apply coatings in accordance with manufacturer's printed instructions.

C. Methods of Application: Brush (B), Roller (R) or Spray (S) application must be used in accordance with the following schedule:

Surface	1st Coat	2nd Coat	3rd Coat
Ferrous Metal			
Primed	----	B, R, S	B, R, S
Unprimed	B, S	B, R, S	B, R, S
Non-Ferrous Metal*			
Primed	----	B, R, S	B, R, S
Unprimed	B, S	B, R, S	B, R, S
Masonry*	R, S	R, S	R, S
Gypsum Wallboard	R, S	R, S	R, S
Wood*			
Primed	----	B	B
Unprimed	B	B	B
Concrete and Concrete			
Masonry Units	R, S	R, S	R, S
Cement Plaster	R, S**	R, S	R, S

* Does not apply to large wall surfaces. Use sheepskin daubers to reach surfaces which are inaccessible to brushes.

** Back-roll first coat when using a spray application.

D. Coats:
1. Apply coats and undercoats in accordance with the manufacturer's recommendations. A uniform and opaque painted finish utilizing at least three coats is the minimum requirement. More coats of paint may be required to obtain a finish acceptable to the COUNTYRepresentative.
2. Tint pigmented undercoats to approximately the same shade as the final coat. Perceptibly increase the depth of shade in successive coats.
3. Allow each coat to thoroughly dry before application of succeeding coat; comply with manufacturer's recommendations for drying time between coats.
4. Sand and dust between each coat to remove defects visible from a distance of 5 feet.

5. Finish coats must be smooth, even and free from brush marks, streaks, laps and pile-up of paints, and skipped and missed areas.
6. Finish mill and shop primed items with materials compatible with prime coat.
7. Paint surfaces of galvanized steel drip moldings, reveal joints and trim, and casing beads that will be exposed in the finished Work.

E. Leave parts of moldings and ornaments clean and true to details with no undue amount of paint in corners and depressions.

F. Edges of paint adjoining other materials and colors must be clean and sharp with no overlapping.

G. Refinish whole surfaces where portion of finish is not acceptable.

H. Pretreatment of Existing Surfaces: Unless specified first coat is suitable for materials and conditions encountered, apply one additional coat of surface conditioner as recommended by paint manufacturer.

I. Priming:
   1. Wood:
      a. Prime or stain and seal wood surfaces.
      b. Apply prime coat to edges, ends, face, underside, and back side of wood to be exposed in the finished Work, including telephone and electric backboards.
   2. Metals:
      a. Prime surfaces of miscellaneous iron and steel not embedded in concrete, and surfaces of non-galvanized, unprimed sheet steel.
      b. Time lapse between priming and application of second coat must be as short as possible to provide for proper bonding to prime coat.

J. Spraying:
   1. Spray only with airless sprayer.
   2. Apply in fine, even spray without addition of thinner.
   3. When necessary, follow by brushing to ensure uniform coverage and to eliminate wrinkling, blistering, and air holes.
   4. If spraying becomes detrimental to equipment or objectionable to personnel, brush painting will be required.

K. Steel Framing:
   1. Where structural and miscellaneous steel framing will remain concealed in completed Work, provide field-applied second prime coat.
   2. Use material compatible with shop-primer material.
   3. Apply after completion of steel erection, before being enclosed.
   4. Omit where steel is to be encased in concrete or to receive cementitious fireproofing.

L. Exposed Plumbing, Mechanical, and Electrical Items:

1. Finish exposed items without factory finish to match adjacent finished surfaces, unless otherwise directed. Where adjacent surface is unfinished, color will be selected by the COUNTYRepresentative.
2. Finish shop primed and/or factory primed items to match adjacent finished surfaces, unless otherwise directed. Where adjacent surface is unfinished, color will be selected by the COUNTYRepresentative.
3. Wash exposed metal with solvent, then prime and paint as scheduled.
4. Spray-paint wherever practicable.
5. Exposed mechanical and plumbing items that require painting include but are not limited to the following:
    a. Uninsulated metal piping.
    b. Uninsulated plastic piping.
    c. Pipe hangers and supports.
    d. Tanks that do not have factory-applied final finishes.
    e. Visible surfaces behind vents, registers, and grilles, which must be painted flat black. When ductwork is exposed, and not otherwise required to be painted, the interior portion of ductwork behind vents, registers, and grilles is not required to be painted.
    f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
    h. Access panels.
6. Exposed electrical items that require painting include but are not limited to the following:
    a. Switchgear.
    b. Panelboards.
    c. Electrical equipment that is indicated to have a factory-primed finish for field painting.
    d. Conduit.
    e. Access panels.

M. Miscellaneous Painting: Perform as indicated or required and as directed to coordinate appearance and/or color of incidental items or surfaces with adjacent surfaces.

N. Touch-up and restore finish where damaged.

O. When complete, painted surfaces must be clean, uniform in appearance, and free from holidays, skips, runs, bubbles, streaks, scratches, and other damage and defects.

3.4 PROTECTION

A. Provide barriers and post signs as necessary to protect newly applied finishes.

3.5 CLEANING

A. Clean up spilled and spattered paint daily.

B. Remove spilled and spattered paint, taking care not to mar surface finish of item being cleaned.

C. Leave the Project site in a clean and orderly condition.

3.6 PAINT SYSTEMS

A. Paint all exterior and interior surfaces not specifically excluded.

B. Only major areas are scheduled, but all miscellaneous items and areas within the room or space must be painted.

C. The number of coats specified is the minimum number acceptable. If full coverage is not obtained with the specified number of coats, apply additional coats as necessary to produce the required finish, at no increase in Contract Price.

D. Acceptance of Final Colors: Final coat of paint for both exterior and interior must not be applied until the colors have been accepted by the COUNTYRepresentative.

3.7 SCHEDULE - ITEMS NOT TO BE PAINTED

A. Do Not Paint the Following Items:
1. Products having factory finish (products which are shop or factory primed only must be painted).
2. Concrete floors to receive finish flooring or with chemical hardener finish as specified in Section 09 61 00.
3. Exterior concrete paving, curbs, gutters, and walks.
4. Pre-finish or factory finished floor, wall and ceiling materials.
5. Plastic laminate-covered surfaces.
6. Copper, stainless steel, aluminum, brass, bronze and chromium-plated surfaces.
7. Elastomeric materials.
8. Glass, glazing compound and sealants.
9. Finish hardware, unless otherwise indicated (hardware which is shop or factory primed only must be painted).
10. Roofing finishing materials.
11. Sprayed fireproofing.
12. Concealed construction such as wall surfaces, mechanical and electrical systems within suspended ceiling spaces, wall shafts, chases and furred spaces.
13. Name plates.
14. UL Labels, fusible links, sprinkler heads.
15. Gauges, thermometers and other recording devices.
16. Moving parts of mechanical equipment such as shafts and valve stems.
17. Lighting fixtures.
18. Plumbing fixtures.
19. Galvanized stair treads and landings
20. Other items specifically indicated not to be painted.
21. Interior concrete surfaces within housing unit cells.

3.8 SCHEDULE - EXTERIOR PAINT SYSTEMS

A. Ferrous metal surfaces - gloss finish (exposed exterior surfaces and items which are generally not visible from the ground):
   1. First Application: White alkyd corrosion inhibitive primer.
   2. Second Application: White alkyd corrosion inhibitive primer, half tinted.
   3. Third Application: Interior/exterior 100 percent acrylic gloss paint.

B. Ferrous metal surfaces - semi-gloss finish (exposed exterior surfaces and items which are generally visible from the ground):
   1. First Application: White alkyd corrosion inhibitive primer.
   2. Second Application: White alkyd corrosion inhibitive primer, half tinted.
   3. Third Application: Interior/exterior 100 percent acrylic semi-gloss paint.

C. Non-ferrous or galvanized metal surfaces - gloss finish (exposed exterior surfaces and items which are generally not visible from the ground):
   1. First Application: Galvanized/aluminum primer or acrylic multi-purpose primer.
   2. Second Application: Interior/exterior 100 percent acrylic gloss paint.
   3. Third Application: Interior/exterior 100 percent acrylic gloss paint.

D. Non-ferrous or galvanized metal surfaces - semi-gloss finish (exposed exterior surfaces and items which are generally visible from the ground):
   1. First Application: Galvanized/aluminum primer or acrylic multi-purpose primer.
   2. Second Application: Interior/exterior 100 percent acrylic semi-gloss paint.
   3. Third Application: Interior/exterior 100 percent acrylic semi-gloss paint.

E. Concrete Masonry:
   1. First Application: Acrylic masonry primer sealer.
   2. Second Application: Concrete block filler - medium aggregate.
   3. Third Application: Exterior 100 percent acrylic wood and masonry flat paint.
   4. Fourth Application: Exterior 100 percent acrylic wood and masonry flat paint.

F. Cement Plaster:
   1. First Application: Acrylic masonry primer sealer.
   2. Second Application: Exterior 100 percent acrylic wood and masonry flat paint.
   3. Third Application: Exterior 100 percent acrylic wood and masonry flat paint.

3.9 SCHEDULE - INTERIOR PAINT SYSTEMS

A. Ferrous metal surfaces - gloss finish (exposed interior surfaces and items which are generally subject to wear, including floor curbs and frames, grating, stair treads, risers, and stringers, pipe railings, handrails, and ladders):
   1. First Application: White alkyd corrosion inhibitive primer.
   2. Second Application: White alkyd corrosion inhibitive primer, half tinted.
   3. Third Application: Interior/exterior 100 percent acrylic gloss paint.

B. Ferrous metal surfaces - semi-gloss finish (exposed interior surfaces and items which are generally not subject to wear, including hollow metal frames and doors, vault frames and doors, and mechanical system piping):
   1. First Application: White alkyd corrosion inhibitive primer.
   2. Second Application: White alkyd corrosion inhibitive primer, half tinted.
   3. Third Application: Interior/exterior 100 percent acrylic semi-gloss paint.

C. Ferrous metal surfaces - eggshell finish (underside of exposed metal decks):
   1. First Application: White alkyd corrosion inhibitive primer.
   2. Second Application: White alkyd corrosion inhibitive primer, half tinted.
   3. Third Application: Interior/exterior 100 percent acrylic eggshell paint.

D. Non-ferrous or galvanized metal surfaces - gloss finish (exposed interior surfaces and items which are generally subject to wear, including floor curbs and frames, grating (except where subject to foot traffic), stair risers and stringers, pipe railings, handrails, and ladders):
   1. First Application: Galvanized/aluminum primer or acrylic multi-purpose primer.
   2. Second Application: Interior/exterior 100 percent acrylic gloss paint.
   3. Third Application: Interior/exterior 100 percent acrylic gloss paint.

E. Non-ferrous or galvanized metal surfaces - semi-gloss finish (exposed interior surfaces and items which are generally not subject to wear, including frames and doors, and mechanical system piping):
   1. First Application: Galvanized/aluminum primer or acrylic multi-purpose primer.
   2. Second Application: Interior/exterior 100 percent acrylic semi-gloss paint.
   3. Third Application: Interior/exterior 100 percent acrylic semi-gloss paint.

F. Non-ferrous or galvanized metal surfaces - eggshell finish (underside of exposed metal deck):
   1. First Application: Galvanized/aluminum primer or acrylic multi-purpose primer.
   2. Second Application: Interior/exterior 100 percent acrylic eggshell paint.
   3. Third Application: Interior/exterior 100 percent acrylic eggshell paint.

G. Mechanical and electrical equipment and/or enclosures - machinery enamel (including mechanical equipment, machinery and appliances, motors, starters and control equipment such as pumps, compressors, fans, unit heaters, ventilation and air conditioning units excluding machine parts, and cabinets and enclosures):
   1. First Application: White alkyd corrosion inhibitive primer (galvanized/aluminum primer on galvanized surfaces).
   2. Second Application: Quick-dry alkyd gloss enamel.
   3. Third Application: Quick-dry alkyd gloss enamel.

H. Concrete masonry wall surfaces not otherwise specified and not specifically excluded in kitchens, dishwashing rooms, showers, wash-down areas, and similar wet locations, and/or indicated as gloss finish:
   1. First Application: Two-component epoxy masonry primer.
   2. Second Application: Concrete block filler - smooth aggregate.
   3. Third Application: Quick-dry alkyd gloss enamel.

4. Fourth application: Quick-dry alkyd gloss enamel.

I. Concrete masonry wall surfaces indicated as epoxy painted, epoxy coated, or polyester coated surfaces:
   1. First Application: Concrete block filler - smooth aggregate.
   2. Second Application: Prime coat(s) per epoxy coating manufacturer's recommendations.
   3. Third Application: Gloss or semi-gloss waterborne epoxy coating.
   4. Fourth Application: Gloss or semi-gloss waterborne epoxy coating.

J. Concrete masonry wall surfaces indicated as semi-gloss finish (for third and fourth applications in kitchen support areas, dining rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic semi-gloss paint):
   1. First Application: Acrylic masonry primer sealer.
   2. Second Application: Concrete block filler - smooth aggregate.
   3. Third Application: Interior 100 percent acrylic semi-gloss paint.
   4. Fourth Application: Interior 100 percent acrylic semi-gloss paint.

K. Concrete masonry wall surfaces indicated as eggshell finish (for third and fourth applications in kitchen support areas, dining rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic eggshell paint):
   1. First Application: Acrylic masonry primer sealer.
   2. Second Application: Concrete block filler - smooth aggregate.
   3. Third Application: Interior 100 percent acrylic eggshell paint.
   4. Fourth Application: Interior 100 percent acrylic eggshell paint.

L. Veneer plaster wall and ceiling surfaces indicated as semi-gloss finish (for second and third applications in kitchens and adjoining support areas, dining rooms, dishwashing rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic semi-gloss paint):
   1. First Application: Interior alkyd pigmented sealer.
   2. Second Application: Interior 100 percent acrylic semi-gloss paint.
   3. Third Application: Interior 100 percent acrylic semi-gloss paint.

M. Veneer plaster wall and ceiling surfaces indicated as eggshell finish (for second and third applications in kitchens and adjoining support areas, dining rooms, dishwashing rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic eggshell paint):
   1. First Application: Interior alkyd pigmented sealer.
   2. Second Application: Interior 100 percent acrylic eggshell paint.
   3. Third Application: Interior 100 percent acrylic eggshell paint.

N. Gypsum wallboard wall and ceiling surfaces indicated as epoxy painted, epoxy coated, or polyester coated surfaces:
   1. First Application: Interior acrylic enamel undercoater.
   2. Second Application: Gloss or semi-gloss waterborne epoxy coating.

3. Third Application: Gloss or semi-gloss waterborne epoxy coating.

O. Gypsum wallboard wall and ceiling surfaces indicated as semi-gloss finish (for second and third applications in kitchens and adjoining support areas, dining rooms, dishwashing rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic semi-gloss paint):
   1. First Application: Interior pigmented sealer.
   2. Second Application: Interior 100 percent acrylic semi-gloss paint.
   3. Third Application: Interior 100 percent acrylic semi-gloss paint.

P. Gypsum wallboard wall and ceiling surfaces indicated as eggshell finish (for second and third applications in kitchens and adjoining support areas, dining rooms, dishwashing rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic eggshell paint):
   1. First Application: Interior pigmented sealer.
   2. Second Application: Interior 100 percent acrylic eggshell paint.
   3. Third Application: Interior 100 percent acrylic eggshell paint.

Q. Exposed wood, including doors, cabinets, trim, baseboards, and miscellaneous components in areas receiving a semi-gloss finish (for second and third applications in kitchens and adjoining support areas, dining rooms, dishwashing rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic semi-gloss paint):
   1. First Application: Interior acrylic enamel undercoater.
   2. Second Application: Interior 100 percent acrylic semi-gloss paint.
   3. Third Application: Interior 100 percent acrylic semi-gloss paint.

R. Plywood: Telecommunications terminal backboard (TTB); apply fire retardant paint system to delay ignition and flame spread.
   1. First Application: Interior Fire Retardant Alkyd Enamel Undercoater.
   2. Second Application: Interior Fire Retardant Alkyd Semi-Gloss Enamel.
   3. Third Application: Same as for Second.

S. Exposed wood, including doors, cabinets, trim, baseboards, and miscellaneous components in areas receiving an eggshell finish, or which are not otherwise specified and not specifically excluded (for second and third applications in kitchens and adjoining support areas, dining rooms, dishwashing rooms, health service and health service support areas, toilet rooms, and janitor rooms, apply interior/exterior 100 percent acrylic eggshell paint):
   1. First Application: Interior acrylic enamel undercoater.
   2. Second Application: Interior 100 percent acrylic eggshell paint.
   3. Third Application: Interior 100 percent acrylic eggshell paint.

T. Exposed wall and ceiling surfaces not otherwise specified and not specifically excluded:
   1. First Application:
      a. Concrete: Two component epoxy masonry primer.
      b. Concrete Masonry: Acrylic masonry primer sealer.

c. Gypsum Wallboard: Interior latex flat enamel (self priming on gypsum wallboard).

2. Second Application:
   a. Concrete: Interior latex flat enamel.
   b. Concrete Masonry: Concrete block filler - smooth aggregate.
   c. Gypsum Wallboard: Interior latex flat enamel.
3. Third Application:
   a. Concrete: Interior latex flat enamel.
   b. Concrete Masonry: Interior latex flat enamel.
4. Fourth Application:
   a. Concrete Masonry: Interior latex flat enamel.

3.10 SCHEDULE - PAINTED SIGNAGE

A. Building / Room / Area Identification:
   1. Type: As specified or as indicated on Drawings.
   2. Paint: As scheduled above under Exterior Paint Systems or Interior Paint Systems.
   3. Text style: Helvetica, condensed where necessary to fit field, capital letters, unless otherwise indicated.
   4. Locations:
      a. Housing:
         1) Fire access signage: 4 inch high red lettering on white background.
         2) Cell numbering: Type and text sequence as shown on Drawings.
         3) Building numbering (concrete walls): Type and text sequence as shown on Drawings. (See Section 10 14 36 for signage on metal panel and Portland cement plaster walls.)
         4) Fire hose cabinets: 4 inch high red lettering on white background, text “FIRE HOSE”.
      b. Guard Tower:
         1) Building numbering: Type and text sequence as shown on Drawings.

END OF SECTION

SECTION 10 26 00
WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Resilient edge and corner guards and resilient bumper guards and associated accessory items.
B. Wainscot wall protection

1.2 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Submit manufacturer's literature describing products.

C. Samples: Submit (3) 12 inch long samples of each type and (3) examples of joinery, corners, end caps, and top caps and field splices.

C. Shop Drawings: Large scale showing layout, construction, mounting heights, profiles, and anchorage.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle packaged materials in original containers with seals unbroken and labels intact until time of use.

B. Unload materials carefully and store on clean concrete surface or raised platform in safe, dry area. Do not dump on ground.

1.4 PROJECT CONDITIONS

A. Schedule installation of items to occur after application of exposed finishes.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Corner Guards: Construction Specialties, “Acrovyn”, Orange, CA 92865 (800) 233.8493, (714) 921.6000;

Contact- McQuarrie & Associates, Sharol McQuarrie (415) 495-4475., Alternate: KofflerGuards or Equal.

B. Wall Protection: MFR: Wilsonart Comact Laminate, or equal

2.2 MATERIALS

A. Corner Guards: Vinyl/acrylic guards consisting of a continuous retainer with snap-on cover. Color matched end caps shall be provided for both partial and full height applications. Attachment hardware shall be appropriate for wall construction.

1. 90 degree surface mounted corner guard with 3 inch legs, 1 inch radius cover and aluminum retainer.

2. Fire Performance Characteristics: Flame spread, 25 or less; smoke developed, 450 or less.

3. Aluminum Retainer: Extruded aluminum, minimum strength and durability as specified in ASTM B221.

4. Corner Guard End Caps: High-impact injection molded plastic closure caps. Provide to terminate ends of corner guards. Color shall match corner guards.
5. Color: To be selected by Architect from manufacturer's full range of colors.

E. Wall Protection: Wall panels shall be manufactured of double faced plastic laminate with a multi-layer core backer panel.

1. Fire Performance Characteristics: Flame spread rating of 55-60, Smoke development of 165-250

2. Color: To be selected by Architect from manufacturer's full range of colors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive items and verify following:

1. That dimensions are correct to receive items.

2. That adjacent or adjoining surfaces are clean, dry, reasonably smooth, and free from defects.

3. Absence of other conditions that will adversely affect installation.

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

3.2 PREPARATION

A. Coordinate as required with installation of exposed finishes and other related Work.

3.3 INSTALLATION

A. General Requirements: Install items in accordance with approved manufacturer's recommendation and approved Shop Drawings.

B. Resilient Corner Guards:

1. Attach retainer clips at 18 inch centers and closure caps at top and bottom of each guard; fasten through finish wall surface to studs.

2. Snap guards into place; ensure hairline joints at caps with gaps not greater than 1/16 inch.

3.4 CLEANING AND PROTECTION

A. Comply with requirements of Section 01 74 00.

B. Protect Work from damage to surface, profile, and shape.

C. Completely remove protective items prior to final acceptance.

D. Replace damaged items.

END OF SECTION

SECTION 10 28 00
TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Toilet and bath accessories.

B. Attachment hardware.

1.2 REFERENCES

A. ADAAG - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.

B. CCR - California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.

C. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.

D. ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.

E. ASTM A386 - Zinc Coating (Hot-Dip) on Assembled Steel Products.

F. ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

G. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

H. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Provide Product Data on accessories, describing size, finish, details of function, attachment methods, laundry temperature limits, fire-test-response characteristics.

C. Submit manufacturer's installation instructions.

D. Curtain fabric: 12 inches square swatch. Mark top and face of material.

E. Shop Drawings: show layouts and types of break-a-way tracks, size of curtains, number of safety tabs, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.

1.4 REGULATORY REQUIREMENTS

A. Conform to CCR, Title 24, Part 2, and ADAAG for access for the handicapped.

1.5 COORDINATION

A. Coordinate the Work of this Section under provisions of Section 01 31 19.

B. Coordinate the Work of this Section with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Norix Washroom Accessories, or equal.

B. Imperial Fastener Company, or equal.

C. Substitutions: Under provisions of Section 01 25 13.

2.2 MATERIALS

A. Stainless Steel Sheet: ASTM A167, Type 304. Or 430

B. Tubing: ASTM A269, stainless steel, Type 304.

C. Adhesive: Two-component epoxy type waterproof.

D. Fasteners, Screws, and Bolts: Hot-dip galvanized, tamperproof.

E. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

F. Fabrics are flame resistant and are identical to those that have passed NFPA 701 when tested by a testing and inspecting agency acceptable to authorities having jurisdiction.

2.3 FABRICATION

A. Weld and grind smooth joints of fabricated components.

B. Form exposed surfaces from single sheet of stock, free of joints.

C. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

D. Back-paint components where contact is made with building finishes to prevent electrolysis.

E. Shop-assemble components and package complete with anchors and fittings.

F. Provide steel anchor plates, adapters, and anchor components for installation.

2.4 FACTORY FINISHING

A. Stainless Steel: No. 4 satin finish.
B. Shower curtain: 6063-T5 aluminum - Satin anodized.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that site conditions are ready to receive Work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. Deliver inserts and rough-in frames to site at appropriate time for building-in.

B. Provide templates and rough-in measurements as required.

C. Verify exact location of accessories for installation.

3.3 INSTALLATION

A. Install fixtures, accessories and items in accordance with manufacturers' instructions.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Verify that no equipment in accessible toilet stalls protrudes past the face of the wall by more than 3 inches.

3.4 SCHEDULE

A. Model numbers refer to Norix products, as a standard of quality and performance, unless otherwise noted.

Model No.	Description	Power	Remark
-	Wall Mirror – 11 ¼" x 17 ¼" #430 Stainless Steel	-	Norix or equal
-	Toilet Paper Holder – Chase Mount – Stainless Steel	-	Norix or equal
-	Security Grab Bar – 24" Stainless Steel – anti ligature	-	Norix or equal
-	Break-A-Way shower curtain & track	-	Imperial Fastener Company or equal

END OF SECTION

SECTION 12 49 40
ROLLER SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Manually operated sunscreen roller shades.

1.2 REFERENCES

A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
3. Storage and handling requirements and recommendations.
4. Mounting details and installation methods.

C. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.

1. Prepare shop drawings based on field dimensions.

D. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.

E. Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.

F. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.

G. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.

B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.

C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

D. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

E. Environmental Certification: Submit written certification from the manufacturer, including third party evaluation, recycling characteristics, and perpetual use certification as specified below. Initial submittals, which do not include the Environmental Certification, below will be rejected. Materials that are simply 'PVC free' without identifying their inputs shall not qualify as meeting the intent of this specification and shall be rejected.

F. Third Party Evaluation: Provide documentation stating the shade cloth has undergone third party evaluation for all chemical inputs, down to a scale of 100 parts per million, that have been evaluated for human and environmental safety. Identify any and all inputs, which are known to be carcinogenic, mutagenic, teratogenic, reproductively toxic, or endocrine disrupting. Also identify items that are toxic to aquatic systems, contain heavy metals, or organohalogens. The material shall contain no inputs that are known problems to human or environmental health per the above major criteria, except for an input that is required to meet local fire codes.

G. Recycling Characteristics: Provide documentation that the shade cloth can and is part of a closed loop of perpetual use and not be required to be down cycled, incinerated or otherwise thrown away. Scrap material can be sent back to the mill for reprocessing and recycling into the same quality yarn and woven into new material, without down cycling. Certify that this process is currently underway and will be utilized for this project.

H. Perpetual Use Certification: Certify that at the end of the useful life of the shade cloth, that the material can be sent back to the manufacturer for recapture as part of a closed loop of perpetual use and that the material can and will be reconstituted into new yarn, for weaving into new shade cloth. Provide information on each shade band indicating that the shade band can be sent back to the manufacturer for this purpose.

I. Mock-Up: Provide a mock-up (manual shades only) of one roller shade assembly for evaluation of mounting, appearance and accessories.

J.

1. Locate mock-up in window designated by Project Engineer.
2. Do not proceed with remaining work until, mock-up is accepted by Project Engineer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 WARRANTY

A. Roller Shade Hardware, Chain and Shadecloth (except EcoVeil™): Manufacturer's standard non-depreciating twenty-five year limited warranty.

1. EcoVeil standard non-depreciating 10-year limited warranty.

B. Roller Shade Motors and Motor Control Systems: Manufacturer's standard non-depreciating five-year warranty.

C. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: MechoShade Systems, Inc.; 42-03 35th Street, Long Island City, NY 11101. ASD. Tel: (718) 729-2020. Fax: (718) 729-2941. Email: info@mechoshade.com, www.mechoshade.com.

B. Lutron Electronics Co., Inc. Or Equal.

C. Substitutions per Section 01 25 13.

2.2 APPLICATIONS/SCOPE

A. Roller Shade Schedule:

1. Shade Type 1: Manual operating, chain drive, sunscreen roller shades where indicated on construction documents.

2.3 SHADE CLOTH

A. Environmentally Certified Shadecloth: MechoShade Systems, Inc., EcoVeil group, 1350 Series, fabricated from TPO for both core yarn and jacket, single thickness, non-raveling 0.030 inch (0.762 mm) thick fabric.

B.

1. Shade Cloth: Refer to Construction Documents.

2.4 SHADE BAND

A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.

B.

1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.

2. Shade band and Shade Roller Attachment:
   a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.

   b. Provide for positive mechanical engagement with drive / brake mechanism.

   c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.

   d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.

   e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.5 SHADE FABRICATION

A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.

B. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:

1. Concealed hemtube.

C.

D. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

E. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Project Engineer. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.

F. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.

G. Blackout shadebands, when used in side channels, shall have horizontally mounted, roll-formed stainless steel or tempered-steel battens not more than 3 feet (115 mm) on center extending fully into the side channels. Battens shall be concealed in a integrally-colored fabric to match the inside and outside colors of the shadeband, in accordance with manufacturer's published standards for spacing and requirements.

1. Battens shall be roll formed of stainless steel or tempered steel and concave to match the contour of the roller tube.

2. Batten pockets shall be self-colored fabric front and back RF welded into the shadecloth. A self-color opaque liner shall be provided front and back to eliminate any see through of the batten pocket that shall not exceed 1-1/2 inches (38.1 mm) high and be totally opaque. A see-through moiré effect, which occurs with multiple layers of transparent fabrics, shall not be acceptable.

2.6 COMPONENTS

A. Access and Material Requirements:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.

2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.

3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.

B. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.

2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.

3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.

4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.

5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.

6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable

7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.

8. Drive Bracket / Brake Assembly:

a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.

b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.

c. The brake shall be an over -unning clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.

d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.

e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.

C. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.7 ACCESSORIES

A. Fascia

1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.

2. Fascia shall be able to be installed across two or more shade bands in one piece.

3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.

4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.

5. Notching of Fascia for manual chain shall not be acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Project Engineer of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.

B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

D. Engage Installer to train County's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 22 04 00
PLUMBING SYSTEM

PART 1 – GENERAL

1.01 Related Documents

A. Requirements of the contract documents form a part of this section.

B. Particular attention is directed to Section 23 00 50, General Mechanical Requirements.

1.02 Scope of Work

A. Provide labor, material and equipment to furnish and install plumbing equipment, trim and accessories required by the contract documents.

B. Provide domestic water, waste and vent services from existing mains as shown on drawings, including pipe, valves, fittings and connection.

1.03 Submittals

A. Provide manufacturer's shop drawings and product data with detailed dimensions and pictures of all items required by Engineer as determined by provisions of section 15050 and in accordance with requirements of Division 1.

PART 2 - PRODUCTS

2.01 Pipe and Fittings

A. Interior Water Piping: Copper tube

1. Type L copper, ASTM B-88, hard drawn temper, ANSI B16.22, wrought copper fittings, lead-free soldered joints.
2. Copper tube and fittings be installed per ASTM B828-92.
3. Flux will meet ASTM B813. Using excess or corrosive flux will lead to early pipe failure.
4. Pipe and fittings shall be California AB 1953 compliant.

B. Above Ground Soil, Waste, and Vent Piping:

1. All waste, vent, sewer and storm lines shall be of cast iron soil pipe and fittings and conform to the requirements of CISPI Standard 301, ASTM A888 or ASTM A74 for pipe and fittings. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute or receive prior approval of the engineer.
2. Cast-iron hubless soil pipe: Service weight; cast-iron hubless soil pipe fittings; hubless joints.

3. Galvanized steel pipe: Schedule 40; Class 125 galvanized cast-iron, drainage pattern fittings for vents only. Screwed or mechanical grooved type fittings.
4. Star, Tyler, AB&I, Charlotte or approved equal. Install per manufactures recommendations.

C. Underground Building Drain Piping:

1. All waste, vent, sewer and storm lines shall be of cast iron soil pipe and fittings and conform to the requirements of CISPI Standard 301, ASTM A888 or ASTM A74 for pipe and fittings. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute or receive prior approval of the engineer.
2. Cast-iron hubless soil pipe: Service weight; cast-iron hubless soil pipe fittings. Husky 4000 wide body four band hubless coupling.
3. Cast iron, service weight, plain end with cast iron mechanical couplings similar to MG Couplings.
4. Star, Tyler, AB&I, Charlotte or approved equal. Install per manufactures recommendations.

2.02 Dielectric Unions: Use in all connections between copper tube and galvanized pipe, steel or cast iron equipment or items of dissimilar metals.

2.03 Valves

A. Ball Valves: Full port, 400 PSI W.O.G., -40 to 180 degrees F, all brass, Teflon seat and o-ring seal, similar to Stockham Fig. No. S214, or Milwaukee No. BA-300.

B. Check Valve 2-1/2" and Smaller: 125 pound SWP, W.O.G., horizontal swing, regrinding type, Y-pattern, renewable disc, Buna-N seat disc, bronze construction per ASTM B-26, FS WW-V-51D Class A Type IV. Similar to Stockham Fig. No. B-310, or Milwaukee No. 509(T).

C. Manufacturers: DeZurik, Jenkins, NIBCO, Rockwell, Stockham, Walworth or approved equivalent.

D. All valves shall be California AB 1953 compliant.

2.04 Cleanouts

A. All waste piping shall have cleanouts at foot of stacks, at building entry, at every change in the direction of run, at intervals of not more than 50'-0" in straight runs inside building walls and as required by code. All outlets shall be accessible so that drain line may be readily cleaned with a snake or other rodding tool. All cleanouts shall be of the same diameter as the pipe, up to 4" maximum. All cleanout plugs shall be brass or bronze, Zurn, Josam, Smith or Wade.

B. Accessible cleanouts in cast iron shall have a countersunk head bronze plug equal to Zurn Z-1470.

C. Cleanouts installed in pipe in fill under floors shall be provided with long sweep 1/4 bend or two 1/8 bends to an easily accessible place or where indicated on drawings. In floors they shall terminate in Zurn Z-1400-2 floor level cleanout with nickel-bronze cover. In finished walls they shall terminate in Zurn Z-1440-1 or Z-1440-3 or equal, cleanout with nickel bronze or stainless steel access cover. In finished grade they shall terminate in Zurn Z-1420-25.

2.05 Specialties

A. Water Hammer Arrestors: At each single plumbing fixture or at each group of fixtures piped from the same runout, provide and install manufactured water hammer arrestors; Zurn "Shoktrol" or similar.

B. Trap Primer: Precision Plumbing Products figure PR-500 with DU-X distribution unit or equal. Install per manufacturer's requirements.

C. All products shall be California AB 1953 compliant.

2.06 Fixtures

A. General: Fixtures and trim shall be complete with fittings, supports, fastening devices, faucets, valves, traps, stops and appurtenances required. Trim shall be finished as indicated and of the same design and manufacturer. Fixture color shall be white, unless noted otherwise. Fixtures noted ADA compliant shall be operable with one hand, no tight grasping, pinching or twisting of the wrist and not require more than 5 lbs force to operate. Water closet flush valve handles shall be installed on the "wide side". All fixtures and faucets shall be California AB 1953 compliant. See Schedule on plans.

2.07 Pipe Insulation

A. Provide 1" thick fiber glass insulation K=.23 (R=4.35) at 75 degrees F, with all service jacket on all domestic hot water and recirculating piping. Insulate exposed trap and exposed hot water piping at handicapped lavatories.

B. Insulation shall be continuous thru pipe supports. Provide insulation shields. Provide "Zeston" type PVC fitting covering. Insulation materials, including adhesives and jackets shall be UL approved and shall have maximum flame spread rating of 25 and smoke developed rating of 50 per ASTM E-84.

C. Acceptable Manufacturers: Armstrong, Knauf, Johns-Manville, Owens-Corning.

PART 3 – EXECUTION

3.01 Workmanship

A. All work shall be performed by skilled tradesman licensed as journeyman plumbers or under their direct supervision. A licensed master plumber shall be in responsible charge of the work and for code compliance.

B. Before starting sewer work, verify grade levels and inverts. Check points of intersection with other utilities and walk the site to verify the routing shown on the drawings to be free from visible obstacles.

C. Wherever possible, run lines straight, direct and parallel to building walls. Keep accurate records of deviations and note concealed obstacles.

3.02 Hangers and Supports: Provide hangers and supports as required to properly install piping per CPC and Manufactures Standardization Society SP 58 and SP 69.

3.03 Provide unions where required to allow maintenance of equipment.

3.04 Do not run piping over electrical panels.

3.05 Provide for thermal expansion by means of piping off sets or change in direction.

3.06 Provide dielectric type connections where dissimilar materials are joined.

3.07 Provide chrome plated escutcheons where exposed piping passes through interior floors or walls and cast iron at exterior locations.

3.08 Provide pipe sleeves where pipe penetrates floors or walls.

3.09 Slope: Unless otherwise shown, slope interior sewer lines 1/4" per lineal foot and exterior sewer lines as shown on plan to meet existing lines of flow.

3.10 Install all materials in strict accordance with manufactures recommendations.

3.11 Flushing and Sterilization: Potable water systems shall be thoroughly flushed and disinfected before being put into service per methods in AWWA C601 publication, "A Procedure for Disinfecting Water Mains", or as required by governing code.

3.12 Provide and adjust DHWR circuit setters to establish described flow in each DHWR branch.

3.13 Provide automatic air vent in DHWR lines at the highest points with drain to plumbing receptor.

END OF SECTION

SECTION 23 00 50
GENERAL MECHANICAL REQUIREMENTS

PART 1 – GENERAL

1.01 Related Documents: Requirements of the Contract Documents, including Division 1 specifications, apply to work of this Section.

1.02 Scope of Work:

A. Provide labor, material, equipment, and services required to furnish and install work in sections listed below.

Section 22 04 00 - Plumbing System

B. Intent of Specifications: In the Specifications, plans, schedules, and details, information conveyed by means of brief mention or notation which regardless of brevity, shall be binding exactly as if presented in complete sentences employing mandatory language. Work not explicitly detailed in the Specification; or Drawings, but clearly standard practice of the trade as necessary to complete the systems shall be included as though fully specified and drawn.

C. Examination of the Site: Examine the site and premises prior to bidding to determine conditions under which the work is to be performed. No allowance will be made for extra expense incurred due to failure to examine the premises. Existing site conditions, locations of services and all requirements of the existing utilities shall be coordinated with the drawings and specifications.

1.03 Standard References and Definitions:

A. Standard is described by reference to various associations.

Abbreviation	Association
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
AWWA	American Water Works Association
CMC	California Mechanical Code
CPC	California Plumbing Code
OSHA	Occupational Safety and Health Act
UL	Underwriters' Laboratories, Inc.

B. Reference is identified by appropriate prefix and number only, with latest revision being applicable.

1.04 Drawings and Specifications

A. With the exception of systems and equipment furnished by Owner, it is intended that work covered by specifications and drawings includes everything requisite and necessary to make various systems complete and operative, irrespective of whether or not every item is specifically provided. Any omission of direct reference herein to any essential item shall not excuse contractor from complying with above intent.

B. Figured dimensions supersede scaled ones. Contractor shall take no advantage of, and shall promptly call Architects attention to any error, omission or inconsistency in specifications and drawings.

C. Special attention is directed to requirement that equipment and materials stated in specifications and/or indicated on drawings shall be furnished, completely installed, adjusted, and left in safe and satisfactory operating condition.

D. Materials, apparatus or equipment specified or otherwise provided for on drawings, addenda, or change order issued subsequent to award or contract, shall be same brand, type, quality and character originally specified unless otherwise provided for in addenda or change order.

E. Layout of equipment, accessories, specialties and suspended, concealed, or exposed piping systems are diagrammatic, unless dimensioned. In preparing shop drawings, Contractor shall check project conditions before installing work. If there are any interference's or conflicts, they shall be called to attention of Contracting Officer immediately for clarifications.

1.05 Permits, Fees and Inspections:

A. Contractor shall make all arrangements for permits and inspections with utility companies, utility districts, and Fire Marshall.

B. Contractor shall not allow or cause any of his work to be covered up or enclosed until it has been reviewed and/or witnessed tests by Owner or Owner's representative and by government authorities having jurisdiction over this work.

1.06 Submittals

A. Shop Drawings
   1. Submit product data for review in accordance with contract documents.
   2. Prior to submitting product data, Contractor shall check for dimensional correctness, interference's, (fit available space), and conformance to specifications and plans. Contractor shall stamp drawings to indicate that stipulated check has been made. Identify submittal data by project name, specification section, and equipment identification number.
   3. Cuts or catalogs, including descriptive literature and characteristics of equipment shall show major dimensions, capacities, curves, pressure

drops, control diagram, finish, code compliance, and motor and drive data; special instructions for shop drawings may be included with the itemized specification below. Submit proof of Title 24 compliance.

4. Custom-made equipment and systems such as built-up air handling units and temperature controls and lists such as for grilles, diffusers and registers, fire dampers, etc., shall be submitted for review. Include shop drawings for each component in an assembly and wiring diagrams for all items incorporating electrical equipment.
5. Shop drawings are required for all equipment, specialties and materials used in this project including but not limited to the items in the shop drawing and vendor guide listed below.
6. Contractor agrees the Shop Drawing Submittals processed by the Contracting Officer are not change orders; that the purpose of shop drawing submittals by the Contractor is to demonstrate his understanding by indicating which equipment and material he intends to furnish and install by detailing the fabrication and installation methods he intends to use.
7. Contractor further agrees that if deviations, discrepancies or conflicts between shop drawings, submittals and the Contract Documents in the form of Design Drawings and Specifications are discovered either prior to or after shop drawings submittals are processed by the Contracting Officer, the Design Drawings and Specifications shall control and shall be followed.

B. Shop Drawing List – Plumbing

1. Lists shall include all items listed and any other significant items not specifically listed.
2. Sanitary Fixtures: Fixtures and trim, supports
3. Sanitary Drainage Specialties: Cleanouts, trap primers
4. Domestic Water System Specialties: Wall hydrants, water hammer arrestors

C. Record Drawings

1. Contractor shall keep on the job one complete set of the contractor working drawings on which he shall record any deviations or changes from such drawings made during construction. Record shall show changes in:
   Size, type, capacity, etc. of any material, device or piece of equipment.
   Location of any device or piece of equipment.
   Location of any outlet or source in building service systems.
   Routing of any piping, conduit, ducts, sewers, or other building services.
2. Drawings shall also record location of concealed water and electric service, water piping, sewers, wastes, vents, ducts, conduit and other piping, by indication of measured dimensions to each such line from readily identifiable and accessible walls or corners of the building.

Drawings also shall show invert elevation of sewers and top of water lines.

3. Drawings shall be kept clean and undamaged, and shall not be used for any purpose other than recording deviations from working drawings and exact locations of concealed work.
4. Each will be able to install his work satisfactorily with least possible interference or delay.
5. Upon completion of work, Contractor shall obtain transparencies from Contracting Officer, at cost, and incorporate changes as noted on record set, including dimensions, and location and depth of bury of underground lines. Contractor shall sign and deliver transparencies with one set of prints to Contracting Officer. Corrections on transparencies shall be made by a professional draftsperson. Items superseded during construction shall be removed and only as-built conditions shall remain on transparencies.

1.07 Conformance with Regulations

A. Give notices and comply with laws, ordinance, rules, regulations and orders of any public authority bearing on work. If Contractor observes that contract documents are at variance with such in any respect, promptly notify Contracting Officer, in writing. Necessary changes will be adjusted by change order.

1.08 Warranty

A. Warranty, in writing, to Owner that work herein shall be free from defects in workmanship and materials, that apparatus will develop capacities and characteristics required in drawings, and that, if any during period of one year after date of certificate of completion and acceptance of project, and such defects appear, he shall remedy them without any cost to Owner.

B. Warranty, as stated, shall include costs of any work required to be done by other Contractor for removal, access, etc. and replacement thereof.

1.09 Substitutions

A. Contractor is cautioned to bid materials listed in the specifications. Contractor may substitute listed material provided:

1. Burden of proof of equivalency is on contractor and acceptance is by the Owner.
2. Contractor is liable for project schedule.
3. Contractor complies with contract documents.

B. Should substitution be allowed, contractor remains liable for operation and performance of originally specified material.

1.10 Inter-Trade Coordination

A. Mechanical Contractor shall schedule and hold a coordination meeting at the beginning of the project. Meeting may be at the job site, Contractor's office or Contracting Officer's office.

B. As a minimum, Mechanical, Electrical, Plumbing and Fire Protection sub contractors shall be present. Contracting Officer and Mechanical Engineer shall be notified of the meeting schedule.

C. Minutes of the meeting shall be recorded by the Mechanical Contractor and forwarded to the Contracting Officer for review.

D. Meeting shall review:
1. Voltage and phasing available at this project.
2. Power requirements for each piece of equipment furnished.
3. Control and starter requirements for each piece of equipment including a review of who is providing said piece of equipment.
4. Location of each piece of equipment, including fans, pumps, smoke fire dampers and detectors, fire risers, fire alarm control panel.

PART 2 – PRODUCTS

2.01 Not Applicable

PART 3 – EXECUTION

3.01 Temporary Facilities shall be provided as stated in Division 1.

3.02 Inspections: Arrange with Contracting Office and enforcing Governmental authorities for required permits and inspections. Furnish Contracting Officer with completed certificates of inspection and approval at completion. Call for inspections when they become due. Do not cover any work until accepted.

3.03 Damage to Other Work: Contractor shall be held responsible for damage caused by his work or through neglect of his workmen. Contractor shall do repairing of damaged work as directed by Contracting Officer; Contractor shall pay cost of repairs.

3.04 Supports

A. Supports for ductwork, pipe, conduit, ceiling grid system, etc., shall not interfere with access to valves, etc.

B. Install equipment, ductwork and piping so that noise and vibration will not be transmitted throughout building.

C. Seismic support of all mechanical equipment, ductwork, grilles and registers, etc. shall comply with 2001 edition, California Building Code, earthquake regulations, SMACNA "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems". The Contracting Officer and structural engineer prior to installation shall review all seismic restraints selected.

3.05 Rubbish: Rubbish resulting from the work herein specified shall be removed from the premises by the trade at the end of each day. On completion of work, remove from the site all tools, equipment, surplus materials, and rubbish. Pay costs for such removal and disposition and cooperate with General Contractor in final cleaning.

3.06 Hoists, Rigging, Transportation and Scaffolding

A. Provide scaffolding, staging, cribbing, tackle, hoists and rigging necessary for placing materials and equipment. Temporary work shall be removed from premises when its use in no longer required on job.

B. Pay costs for transportation of materials and equipment to job site and include such costs in proposal.

C. Scaffolding and hoisting equipment shall comply with requirements of Federal, State and Local laws and codes.

3.07 Equipment Ingress: Contractor is solely responsible for purchasing equipment and materials in such knock-down condition that they will pass through building openings or such openings as may occur incidentally during building construction. Coordinate this effort with General Contractor.

3.08 Accessibility

A. Install work so as to be readily accessible for operation, maintenance and repair; minor deviations from drawings may be made to accomplish this. Changes shall not be made without approval of the Contracting Officer.

B. Coordinate with other contractors for location of piping, ductwork and equipment.

3.09 Protection of Building, Openings and Materials

A. In addition to the provisions and stipulations in the General Conditions, provide various types of protection as follows:

1. Protect finished floors from chips and cutting oil by the use of metal chip receiving pan and a floor cover.
2. Protect equipment and finished surfaces from welding and cutting splatters with baffles and splatter blankets.

3. Protect equipment and finished surfaces from paint droppings, insulation adhesive and sizing droppings, etc., by use of drop cloths.

B. Pipe and construction openings and excavations required for mechanical work shall be covered when work is not in progress, as follows:

1. Cap pipe openings with fittings or plugs.
2. Cover wall and ceiling openings with plywood, or canvas covered framing.
3. Cover floor openings and excavations with structural material of adequate strength to support traffic.
4. Provide guards and rails at pits and openings as required by governing authority.

C. Equipment and material shall be covered and protected and kept clean during storage and shall not be exposed to the weather. Equipment such as chillers, boilers, fans, etc., shall be warehoused or stored indoors.

3.10 Excavation and Backfilling

A. Unless otherwise specified, provide for excavation and backfilling. Determine lines and levels and provide necessary shoring, excavation, drainage, excavation protection. Bell holes shall be dug to ensure pipe resting for its entire length on bottom of trench.

B. Where pipe is being installed in filled areas, "structural fill" must be firmly compacted, and backfilled with crushed stone to pipe laying level.

C. Fill shall be as approved by the Contracting Officer. Sand fill shall be provided from off site borrows. Excess excavated material shall be disposed of off-site.

3.11 Flushing and Sterilization: Potable water systems shall be thoroughly flushed and disinfected before being put into service per methods in AWWA C601 publications, "A Procedure for Disinfecting Water Mains", as required by Governing code. Provide laboratory certificate at close-out.

3.12 Manufacturer's Nameplates

A. Each unit of equipment shall be identified by permanently attached nameplate of corrosion resistant metal. Plates shall bear following information:
1. Manufacturers name
2. Serial and model numbers
3. Rated capacity
4. Temperature, pressure or other limitations.

B. Equipment and Systems Identification

C. Identify each unit as to function and system number as directed by the Contracting Officer and as listed.

D.

Item	Type Identification
Switches, pilot lights (Remote)	Label plastic laminate
Pipe lines	Stencil, labels

E. Service Abbreviations

Domestic Cold Water	DCW
Domestic Hot Water	DHW
Domestic Hot Water Return	DHWR

3.13 Testing

A. Test all piping, new and existing. Report failures of existing piping to the Owner. Test piping and equipment as specified under CPC, CMC or other sections. Furnish labor, materials, instruments, power, etc. required for testing, unless otherwise specified.

B. Perform tests as required by parties having legal jurisdiction. Notify these parties a minimum of three days before testing.

C. In general, pressure tests shall be applied to piping only, before connection of equipment and appliances. In no case shall piping or appliances be subject to pressure exceeding their rating. Defective work shall be promptly repaired or replaced, and test shall be repeated until the particular system and component parts thereof receive approval of Contracting Officer.

D. Damages resulting from tests shall be repaired, or damaged materials replaced, to satisfaction of the Contracting Officer and at no cost to Owner.

E. If Contractor does not promptly repair damages and defects, Owner reserves the right to remedy such damages and defects at Contractor's expense.

3.14 Requirement for Final Inspection

A. Following items must be completed prior to final inspections. No final payment will be made and the mechanical work will not be accepted until all items are completed.
1. Thoroughly clean parts of the apparatus and equipment. Exposed parts, which are to be painted, shall be thoroughly cleaned of cement, plaster and other materials and all oil and grease shall be removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out.
2. Exposed metal work shall be carefully brushed down with steel brush to remove rust and other spots and left smooth and clean.
3. Provide clean set of specified filters in all air circulating equipment.

4. Test and balance work shall be complete and reports received and reviewed by Contracting Officer.

3.15 Operating Instruction and Service Manual

A. Following items together with any other pertinent data shall be included. List is not necessarily complete and shall be considered minimum.

1. Manufacturer's name, nearest representative and model and serial numbers of component of system.
2. Operating instruction, start-up and shut down procedure.
3. Maintenance and lubrication instructions.
4. Parts list.
5. Manufacturer's literature describing each piece of equipment.
6. One stamped copy of each shop drawing submitted under item list.
7. Part numbers of all replaceable items.

B. After review of a copy of the manual by the Contracting Officer, two (2) copies of each manual shall be furnished to the Owner.

C. The operating instructions and service manual shall be considered a part of the final inspection and shall be submitted for review at least 30 days in advance of request for final inspection.

END OF SECTION

SECTION 31 10 00
SITE CLEARING

PART 1 GENERAL

1. SUMMARY

   A. Section Includes:
      1. Removing surface debris.
      2. Removing designated pavement markings.
      3. Removing abandoned utilities.
      4. Excavating topsoil.

2. UNIT PRICE - MEASUREMENT AND PAYMENT

   A. Site Clearing:

      1. Basis of Measurement: By lump sum.
      2. Basis of Payment: Includes clearing Site, loading and removing waste materials from Site, applying herbicide to designated plant life.

3. QUALITY ASSURANCE

   A. Perform Work according to San Benito County Standards.

PART 2 PRODUCTS

1. MATERIALS

   A. None

PART 3 EXECUTION

1. EXAMINATION

   A. Verify existing plant life designated to remain is tagged or identified.

   B. Identify waste area for placing removed materials.

2. PROTECTION

A. Locate, identify, and protect utilities indicated to remain from damage.

B. Protect bench marks and existing structures from damage or displacement.

3. CLEARING

A. Clear areas required for execution of Work to as needed.

4. REMOVAL

A. Remove debris, rock, and extracted plant life from Site.

B. Partially remove paving, as indicated. Neatly saw cut edges at right angle to surface.

C. Remove abandoned utilities. Indicated removal termination point for underground utilities on record documents.

D. Continuously clean-up and remove waste materials from Site. Do not allow materials to accumulate on Site.

E. Do not burn or bury materials on Site. Leave Site in clean condition.

5. TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be paved without mixing with foreign materials for use in finish grading.

B. Do not excavate wet topsoil.

C. Remove excess topsoil not intended for reuse from Site.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1. SUMMARY

   A. Section Includes:
      1. Asphalt materials.
      2. Aggregate materials.
      3. Aggregate subbase.
      4. Asphalt paving base course, binder course, and wearing course.
      5. Asphalt paving overlay for existing paving.

2. SUBMITTALS

   A. Product Data:

      1. Submit product information for asphalt and aggregate materials.

3. QUALITY ASSURANCE

   A. Perform Work in accordance with San Benito County Standards.

PART 2 PRODUCTS

1. ASPHALT PAVING

   A. Performance / Design Criteria in accordance with San Benito County Standards

   B. Asphalt Materials in accordance with San Benito County Standards

   C. Aggregate Materials:

      1. Coarse Aggregate: ASTM D692; crushed stone, gravel, or blast furnace slag.

2. ACCESSORIES

   A. Sealant: per San Benito County Standards.

PART 3 EXECUTION

1. EXAMINATION

   A. Verify gradients and elevations of base.

2. INSTALLATION

   A. Primer

      1. Apply primer in accordance with San Benito County Standards
      2. Use clean sand to blot excess primer.

   B. Slurry Seal Coat
      1. Apply tack coat on asphalt and concrete surfaces over subgrade surface at uniform rate.
      2. Apply tack coat to contact surfaces of curbs, gutters and milled asphalt.
      3. Coat surfaces of manholes and water valve frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

   C. Single Course Asphalt Paving

      1. Install Work in accordance with San Benito County Standards.
      2. Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
      3. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3. TOLERANCES

   A. In accordance with San Benito County Standards

4. FIELD QUALITY CONTROL

   A. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

END OF SECTION

SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1. SUMMARY

   A. Section Includes:

      1. Concrete paving for:

         Concrete sidewalks.
         Concrete driveway approaches.

2. SUBMITTALS

   A. Product Data:

      1. Submit data on concrete materials

   B. Design Data:

      1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required.

PART 2 PRODUCTS

1. CONCRETE PAVING

   A. In accordance with San Benito County Standards

2. CONCRETE MIX

   A. Mix and deliver concrete in accordance with San Benito County Standards

PART 3 EXECUTION

1. EXAMINATION

   A. Verify gradients and elevations of base..

2. PREPARATION

A. Moisten substrate to minimize absorption of water from fresh concrete.

3. INSTALLATION

A. Forms:
   1. Place and secure forms to correct location, dimension, and profile.
   2. Place joint filler in joints, vertical in position, in straight lines. Secure to formwork.
   3. Place joint filler between paving components and other appurtenances.

B. Reinforcement:

   1. Place reinforcing at in accordance with San Benito County Standards

C. Placing Concrete:

   1. Place concrete in accordance with San Benito County Standards
   2. Do not disturb reinforcing or formwork components during concrete placement.
   3. Place concrete continuously between predetermined joints.
   4. Place bumpers secure.

D. Finishing:

   1. Sidewalk Surfaces: Light broom, radiused and trowel joint edges.
   2. Curbs and Gutters: Light broom, radiused and trowel joint edges
   3. Apply curing compound on exposed concrete surfaces immediately after finishing.

END OF SECTION

SECTION 33 42 00
STORMWATER CONVEYANCE

PART 1 GENERAL

1. SUMMARY

   A. Section Includes:
      1. Stormwater drainage piping.
      2. Manholes.
      3. Catch basins.
      4. Cleanouts.
      5. Pile support systems.
      6. Concrete encasement and cradles.
      7. Bedding and cover materials.

2. DEFINITIONS
   A. ABS: Acrylonitrile butadiene styrene.

3. SUBMITTALS
   A. Manufacturer's Certificate: Products meet or exceed specified requirements.
   B. Manufacturer Instructions: Special procedures required to install specified products.

4. QUALITY ASSURANCE
   A. Perform Work according to San Benito County Standards.

5. DELIVERY, STORAGE, AND HANDLING
   A. Store materials according to manufacturer instructions.
   B. Protection:
      1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
      2. Provide additional protection according to manufacturer instructions.

6. EXISTING CONDITIONS
   A. Field Measurements:
      1. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

1. STORM DRAINAGE PIPING
   A. Comply with San Benito County Standards

2. MANHOLES
   A. Comply with San Benito County Standards

3. CATCH BASINS
   A. Comply with San Benito County Standards

4. CLEANOUTS
   A. Comply with San Benito County Standards

5. MATERIALS
   A. Comply with San Benito County Standards.

6. MIXES
   A. Comply with San Benito County Standards

PART 3 EXECUTION

1. INSTALLATION

   A. Comply with San Benito County Standards

2. TOLERANCES
   A. Comply with San Benito County Standards

3. FIELD QUALITY CONTROL
   A. Inspection:
      1. Request inspection by City Inspector prior to and immediately after placing aggregate cover over pipe.
   B. Testing:
      1. Comply with San Benito County Standards

4. PROTECTION
   A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION