

Table of Contents

_Table_Contents R3 rev	3
1 DIVISION 1 - GENERAL REQUIREMENTS	3
2 DIVISION 2 - SITEWORK	3
3 DIVISION 3 - CONCRETE	3
4 DIVISION 4 - MASONRY	3
5 DIVISION 5 - METALS	3
6 DIVISION 6 - WOOD AND PLASTICS	4
7 DIVISION 7 - THERMAL AND MOISTURE PROTECTION	4
8 DIVISION 8 - DOORS AND WINDOWS	4
9 DIVISION 9 - FINISHES	4
10 DIVISION 10 - SPECIALTIES	4
11 DIVISION 11 - EQUIPMENT	5
12 DIVISION 12 - FURNISHINGS	5
13 DIVISION 13 - SPECIAL CONSTRUCTION	5
14 DIVISION 23 - MECHANICAL	5
14.1 DIVISION 26- ELECTRICAL	5
00 41 00 - Bid Form R1 09-14-17 rev	7
1 BIDDER'S PROPOSED SECTION 3 CONTRACTS/SUBCONTRACTS	15
2 Department of Housing and Community Development	17
02 05 00-Demolition	19
1 PART 3 - EXECUTION	20
02 76 50-Pavment Striping	23
03 10 00-Conc Formwork	25
03 21 00_Conc Reinf	31
03 30 00-Cast in place Conc	39
05 50 00-Miscellaneous Metals	57
05 51 16 Wheelchair Ramp	65
06 10 00 Rough Carpentry	73
06 20 00-Finish Carpentry	81
06 40 00_ArchCasework	85
1 SECTION 06 40 00 – ARCHITECTURAL CASEWORK	85
2 PART 1 - GENERAL	85
07 21 00-Thermal and Acoustical Insulation	94
07 25 50-Fire Safing Materials	98
07 60 00-Sheet Metal Work	104
07 92 00-Sealants and Caulkings	110
08 10 00-Metal Doors and Frames rev	118
08 21 00-Wood Doors	124
08 71 00-Finish Hardware	128
09 10 00-Lightgauge Metal Framing N rev	136
09 25 00-Gypsum Wallboard	154
09 30 00-Tile	162
09 51 00-Acoustical Ceiling	172

09 65 00-Resilient Flooring and Base Rev	177
09 90 00-Painting	183
10 05 00-Misc Specialties	194
10 40 00 Identifying Devices	198
10 80 00-Toilet Accessories rev	202
11 12 00-Unit Appliances	204
14 41 50 Wheelchair Lift	212

PART VI - SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

- Section 01 01 00 - Summary of Work
- Section 01 23 00 - Alternates
- Section 01 25 00 - Substitution Procedures
- Section 01 26 00 - Contract Modification Procedures
- Section 01 29 00 - Payment Procedures
- Section 01 30 00 - Submittal Procedures
- Section 01 31 00 - Project Management and Coordination
- Section 01 32 00 - Construction Progress Documentation
- Section 01 40 00 - Quality Requirements
- Section 01 42 16 - Definitions
- Section 01 50 00 - Temporary Facilities and Controls
- Section 01 57 13 - Temporary Erosion and Sediment Control
- Section 01 57 23 - Stormwater Pollution Protection
- Section 01 58 13 - Temporary Project Signage
- Section 01 60 00 - Product Requirements
- Section 01 61 16 - Volatile Organic Compound (VOC) Content Restriction
- Section 01 70 00 - Execution and Closeout Requirements
- Section 01 73 29 - Cutting and Patching
- Section 01 74 19 - Construction Waste Management and Disposal
- Section 01 78 00 - Closeout Submittals & Guarantee Form

DIVISION 2 - SITEWORK

- Section 02 05 00 - Demolition
- Section 02 76 50 - Pavement Striping

DIVISION 3 - CONCRETE

- Section 03 10 00 - Concrete Formwork
- Section 03 20 00 - Concrete Reinforcement
- Section 03 30 00 - Cast-in-place Concrete

DIVISION 4 - MASONRY

(Not Used)

DIVISION 5 - METALS

TABLE OF CONTENTS

SEPTEMBER 2019

Section 05 50 00 - Miscellaneous Metals
Section 05 51 00 - Wheelchair Ramp

DIVISION 6 - WOOD AND PLASTICS

Section 06 10 00 - Rough Carpentry
Section 06 30 00 - Finish Carpentry
Section 06 40 00 - Architectural Casework

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

Section 07 21 00 - Thermal and Acoustical Insulation
Section 07 25 50 - Fire Safing Materials
Section 07 60 00 - Sheet Metal Work
Section 07 92 00 - Sealants and Caulkings

DIVISION 8 - DOORS AND WINDOWS

Section 08 10 00 - Metal Doors and Frames
Section 08 21 00 - Wood Doors
Section 08 71 00 - Finish Hardware

DIVISION 9 - FINISHES

Section 09 10 00 – Lightgauge Metal Framing
Section 09 25 00 - Gypsum Wallboard
Section 09 30 00 - Tile
Section 09 51 00 - Acoustical Ceilings
Section 09 65 00 - Resilient Flooring and Base
Section 09 90 00 - Painting

DIVISION 10 - SPECIALTIES

Section 10 05 00 - Miscellaneous Specialties
Section 10 40 00 - Identifying Devices
Section 10 80 00 - Toilet Accessories

DIVISION 11 - EQUIPMENT

Section 11 12 00 - Unit Appliances

DIVISION 12 - FURNISHINGS

(Not Used)

DIVISION 13 - SPECIAL CONSTRUCTION

(Not Used)

DIVISION 14 - CONVEYING SYSTEMS

Section 14 41 50 - Wheelchair Lift

DIVISION 23 - MECHANICAL

Refer to Drawings

DIVISION 26- ELECTRICAL

Refer to Drawings

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PROJECT: Interior Tenant Improvement for Hamilton City Community Hall and Chester Walker Memorial Library –ADA Upgrade
Issue for Bid – Nov 2019

SECTION 00 41 00

BID FORM

FOR: *GLENN COUNTY
HAMILTON CITY COMMUNITY HALL AND CHESTER WALKER MEMORIAL
LIBRARY –ADA UPGRADE
GENERAL CONTRACTOR*

BID TO: Honorable Board of Supervisors of the County of Glenn
525 W. Sycamore Street, Suite B1
Willows, CA 95988
Glenn County, State of California

BID FROM:

Firm Name: _____ Telephone: (_____) _____

Address: _____

Contractor's License Number: _____

License Classification: _____ License Expiration Date: _____

Contractor's Federal Tax I.D. Number: _____

California Department of Industrial Relations Number: _____

DUNS Number: _____

TYPE OF BUSINESS:

- CORPORATION: STATE OF INCORPORATION: _____
- PARTNERSHIP
- JOINT VENTURE
- PRIVATE INDIVIDUAL
- INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

I HEREBY SWEAR AND CERTIFY UNDER PENALTY OF PERJURY THAT THE ABOVE STATEMENTS ARE TRUE.

Bid and certification submitted by:

Signature _____ Date _____
Authorized Representative

Title _____

1.0 BIDDER’S REPRESENTATIONS

Bidder, represents that:

- A) It has the appropriate active Contractor's license required by the State of California;
- B) It shall complete the attached Statement of Experience;
- C) It has carefully read and examined the Bidding Documents for the proposed Work on this Project;
- D) It has examined the site of the proposed Work and all Information Available to Bidders;
- E) It has become familiar with all the conditions related to the proposed Work, including the availability of labor, materials, and equipment.
- F) It shall comply with all Labor compliance and regulations set forth in Exhibit A - Department of Housing & Community Development - CDBG Program Labor Compliance & Contract Language

Bidder hereby offers to furnish all labor, materials, equipment, tools, transportation, and services necessary to complete the proposed Work on this Project in accordance with the Contract Documents for the sums quoted. Bidder further agrees that it will not withdraw its Bid within **Forty-Five {45}** days after the Bid Deadline, and that, if it is selected as the apparent lowest responsive and responsible Bidder, that it will, within fourteen {14} days after receipt of notice of selection, sign and deliver to Glenn County the Agreement and furnish to Glenn County all items required by the Bidding Documents. If awarded the contract, Bidder agrees to schedule and execute the Work in accordance with the Construction Documents and agrees to fully complete the Work within the Contract Time.

2.0 ADDENDA

Bidder acknowledges receipt of the following addenda and has included all work in its Lump Sum Bid amount.

<u>Addendum #</u>	<u>Date</u>
1 _____	_____
2 _____	_____
3 _____	_____

3.0 BID ITEM LIST

Pursuant to your published Notice to Bidders for the above referenced project, and in accordance with the approved Plans and Specifications for that project, the following bid for said entire project is submitted by the firm indicated on the last page of this Bid Form.

Item	Description	Quantity	Unit	Unit price, dollars	Total bid item price, dollars
BASE BID					
1.	Mobilization	1	LS		
2.	Improvements to Hamilton City Community Hall	1	LS		
3.	Improvements to Chester Walker Memorial Library	1	LS		
TOTAL BASE BID (in figures) Items 1 through 3:				\$ _____	
ADDITIVE ALTERNATES					
4.	Pave Gravel Parking Area				
5.	Upgrade Linoleum to Carpet Squares in Library				
6.	Convert Stage Dressing Area to Restroom				

4.0 SELECTION OF APPARENT LOW BIDDER

1. The County shall determine the lowest responsible, responsive bidder based on the lowest TOTAL BASE BID.
2. If this proposal shall be accepted and the undersigned shall fail to enter into the contract and furnish the two bonds in the sums to be determined as aforesaid with surety satisfactory to the County of Glenn, within 10 days, not including Saturdays, Sundays, and legal holidays, after the bidder has received notice from the Director that the contract has been awarded, the County of Glenn may, at its option, determine that the bidder has abandoned the contract, and thereupon this proposal and the acceptance thereof shall be null and void and the forfeiture of such security accompanying this proposal shall operate and the same shall be the property of the County of Glenn.
3. In the event that the product of a unit price and an estimated quantity does not equal the extended amount stated, the unit price will govern and the correct product of the unit price and the estimated quantity shall be deemed to be the amount bid.
4. The County, if it chooses to award, shall award the contract to the lowest responsible, responsive bidder based on the criteria listed in note 1 above, however, the County may at its discretion, award the base bid along with any combination of the bid alternates it chooses.

5.0 **BID GUARANTY**

Bid security must be a bidders bond, a certified check or cashiers check payable to the County of Glenn, or cash. Bids secured by personal checks or personal guarantees will be rejected.

6.0 **AFFIDAVIT OF NONCOLLUSION**

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder swears, deposes and says that he or she, as the party making the foregoing bid, declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Noncollusion Affidavit (Exhibit 12-E Attachment D, Title 23 United States Code Section 112 and Public Contract Code Section 7106)

7.0 STATEMENT OF EXPERIENCE

The bidder has been engaged in the contracting business, under the present business name for _____ years. Experience in work of a nature similar to that covered in the proposal extends over a period of _____ years.

The bidder, as a Contractor, has never failed to satisfactorily complete a Contract awarded to him, except as follows: _____

The following contracts have been satisfactorily completed in the last three (3) years for the persons, firm or authority indicated, and to whom reference is made:

Year	Type of Work	Contract Amount	Owner/Agency for Whom Work was Performed

The following is a list of plant and equipment owned by the bidder, which is definitely available for use on the proposed work as required. Provide additional sheets if necessary.

Quantity	Name, Type and Capacity	Condition	Location

SUBMIT THIS SHEET, ADDITIONAL SHEETS, AND/OR A SIMILARLY FORMATTED DOCUMENT AS PART OF YOUR BID

8.0 SUBCONTRACTOR LISTING

In accordance with the California Public Contract Code, Division 2, Part 1, Chapter 4, Section 4100, and following, the subcontractors listed on the Bid Form attachment will perform the indicated work of improvement on the project.

The list shall specify the name and the location of the place of business of each subcontractor who will perform work or labor or render service to the contractor in or about the construction of the work or improvement, or a subcontractor licensed by the state of California who, under subcontract to the contractor, specifically fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, (b) the portion of the work which will be done by each subcontractor. The contractor shall list only one subcontractor for each such portion as is defined by the contractor in its bid. Per 00 20 00 Instructions to Bidders.

The following are the names and locations of places of business of all subcontractors who will perform work or labor or render service to the bidder in or about the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent (0.5%) of the total bid or in the case of bids for the construction of streets and highways, including bridges, in an amount in excess of one-half of one percent (0.5%) of the total bid or ten thousand dollars (\$10,000) whichever is greater.

Portion of Work	Subcontractor Name / Contractor's License #	Place of Business	DIR Registration #

PROJECT: Interior Tenant Improvement for Hamilton City Community Hall and Chester Walker Memorial Library –ADA Upgrade
Issue for Bid – Nov 2019

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STATE OF CALIFORNIA CDBG Program
 Department of Housing and Community Development

BIDDER’S PROPOSED SECTION 3 CONTRACTS/SUBCONTRACTS

Type of Contract (Business or Profession)	Total No.	Total Approximate Dollar Amount	<i>Estimated No. of</i> Contracts to Section 3 Businesses	Estimated Dollar Amount to Section 3 Businesses

Section 3 Business Concern:
 1. A business that is 51% or more owned by Section residents, or
 2. A business whose permanent full time work force at least 30% are Section 3 residents or,
 3. A business which contracts a dollar amount of all subcontracts with businesses as defined in numbers 1 and 2 above.

Company

Project Name

Project Number

Person Completing Form

Date

PROJECT: Interior Tenant Improvement for Hamilton City Community Hall and Chester Walker
Memorial Library –ADA Upgrade
Issue for Bid – Nov 2019

**STATE OF CALIFORNIA CDBG Program
 Department of Housing and Community Development
 BIDDER’S SECTION 3 PROPOSED NEW HIRES**

Job Category	Total Estimated Positions Needed for the Project	No. of Positions Occupied by Permanent Employees	Number of Positions Not Occupied	No. of Positions to be filled with Section 3 Residents
Officer/Supervisors				
Professionals				
Technical				
Housing Sales/ Rental Management				
Office/Clerical				
Service Workers				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				

Section 3 Resident:

Individual residing in a public housing project or

project is located and whose income does not exceed 80% of the higher of the median income, adjusted for family size, for the county of residence or the non-metropolitan area of the state.

Company

Project Name

Project Number

Person Completing Form

PROJECT: Interior Tenant Improvement for Hamilton City Community Hall and Chester Walker
Memorial Library –ADA Upgrade
Issue for Bid – Nov 2019

Date

SECTION 02 05 00 - DEMOLITION

PART 1 - GENERAL

1.01 SCOPE:

- A. Remove portions of partitions, door, frames, windows, fixtures, equipment and materials, including but not limited to bolts, anchors, slabs and other existing miscellaneous and incidental work as indicated on Drawings and Schedules, and other items indicated on the Drawings, specified here, or as otherwise necessary to execute the work.
- B. Remove demolished materials from site and disposal off-site.
- C. Salvage and store for reuse all items specifically noted on the Drawings.
- D. Demolish exterior items as indicated and as occur and as required to accommodate the new work, including concrete slabs, paving, walks, curbs, landscaping and Irrigation systems. **Remove existing aggregate base as shown on the drawings and as required to accommodate new work.** Existing aggregate base may be reused as base material for new concrete paving.
- E. **Protect existing construction and items to remain. Refer to Section 01 31 00 - Project Management and Coordination and Section 01 50 00 - Construction Facilities and Temporary Controls for additional requirements.**

1.02 RELATED WORK DESCRIBED ELSEWHERE:

- A. **Cutting and Patching: Section 01 73 29**
- B. Mechanical: Refer to Mechanical Drawings.
- C. Electrical: Refer to Electrical Drawings.

1.03 PROJECT/SITE CONDITIONS:

- A. The Contractor shall assume complete responsibility for maintaining all necessary services to remaining portions of building not being remodeled.
- B. Existing Utilities: Protect active utility lines that are to remain. Repair or replace any such utilities damaged by this Work at no additional cost to Owner.
- C. Do not begin work of this Section until existing areas to remain have been properly prepared and supported.

DEMOLITION
2019

SEPTEMBER

1.04 SAFETY REQUIREMENTS AND STANDARDS:

Conform to local, state and federal codes, rules and regulations and ordinances for protection of workers, the public and property, and provide, install and maintain barricades, warning devices and other protection where required therefor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 INSPECTION:

The Contractor shall inspect the existing areas to be demolished and notify the Architect of any problems in the Work.

3.02 PREPARATION:

- A. Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons. Erect temporary covered passageways as required.
- B. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of structures to be demolished, and adjacent facilities to remain.

3.03 DEMOLITION:

- A. Proceed with demolition in a systematic manner, from top of structure to floor.
- B. Saw cut, break up and remove concrete as indicated in conformance with **Section 01 73 29 - Cutting and Patching**.
- C. Traffic: Perform demolition and clean up to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
- D. Completely protect existing adjacent buildings and offsite buildings and property at all times from dust, dirt, moisture and demolition operations resulting from this work. Repair damage to satisfaction of the Architect and at no additional cost to the Owner.
- F. Separation between work to be removed and work to remain shall present an even,

DEMOLITION
2019

SEPTEMBER

straight line and smooth surface when portion to be demolished is removed.

- G. Material removed during demolition may be reviewed by Owner, who may retain any materials with no change to the Contract amount or to the Contract Time. The Owner will remove from the site, at his own expense, any retained demolished materials. Contractor shall legally dispose of remaining material.
- H. Material identified for removal for reuse shall be carefully removed to prevent damage, and stored in a protected and secure location on site or at facilities provided by the Contractor until needed. Contractor shall remove, store and identify, as required for reinstallation, all fasteners, connectors, supports, backings, accessories, etc. associated with material identified for reuse.
- J. Asbestos containing products may be present in the existing construction; if suspect materials are encountered, the Contractor shall immediately notify the Owner's Representative for instructions prior to proceeding with additional work. The Contractor shall immediately post Notices and take precautions necessary to ensure the health and safety of all workers, the staff and the public.
- K. No note or instruction in the contract documents shall be construed to imply that removal of materials containing or suspected of containing asbestos is part of this work; removal of asbestos containing materials will be performed by others and is not in the contract.

3.04 DEBRIS DISPOSAL:

- A. Except as otherwise indicated or directed, debris resulting from work of this Section shall become this Contractor's property and shall be removed from site.
 - 1. Location of disposal sites and length of hauls are Contractor's responsibility. On-site burning will not be permitted.
- B. The Contractor may not use the Owner's trash bins or containers for disposal of demolished materials.

3.05 ADJUSTING AND CLEANING:

- A. Clean up to leave the existing work in a condition ready to proceed with the remaining Work.
- B. Remove from site debris, rubbish and other materials resulting from demolition operation and legally dispose of off site.

DEMOLITION
2019

SEPTEMBER

- C. Promptly repair damages caused by this work to satisfaction of Architect at no additional cost to Owner.

END OF SECTION

SECTION 02 76 50 - PAVEMENT STRIPPING

PART 1 - GENERAL

1.01 SCOPE

Provide traffic stripes, curb and pavement markings, directional and informational pavement graphics as indicated on Drawings and specified here.

1.02 RELATED WORK

Refer to Drawings.

1.03 REFERENCES

- A. Standard Specifications of the Department of Transportation, State of California (Caltrans), latest edition, Section 84, Traffic Stripes and Pavement Markings.
- B. 2016 CBC, California Building Code.
- C. City of Hamilton and Glenn County, Department of Public Works, applicable requirements.

1.04 PROJECT CONDITIONS

Apply paint materials only on dry pavement and only during periods of favorable weather. Do not apply paint at temperatures below 50 degrees F.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Vinyl-epoxy emulsion based, alkyd resin based, or alkyd-chlorinated rubber-chlorinated paraffin based conforming to Caltrans FF TT-P-115 Class A Traffic Paint
 - 1. Vin-L-Stripe Traffic Paint by Dunn-Edwards Corporation.
 - 2. Pro-Mar Traffic Marking Paint by Sherwin Williams Company.
 - 3. Traffic and Zone Marking Paint by Pittsburgh Paints, PPG Industries.
 - 4. Approved equal.

PAVEMENT STRIPPING

SEPTEMBER 2019

2.02 APPLICATION EQUIPMENT

Conform to general requirements of Caltrans Standard Specifications Section 84-3.04 as approved by Architect.

PART 3 - EXECUTION

3.01 INSPECTION

Applicator shall examine surfaces to receive striping and markings and verify that substrate is ready for striping. In event of discrepancies, immediately notify Contractor. Do not proceed until all discrepancies have been resolved.

3.02 APPLICATION

- A. Lay out striping, markings, and graphics as indicated on the Drawings.
- B. Using proper masking, stencils, and application equipment recommended for the purpose by the paint manufacturer, apply the approved paint in strict accord with manufacturer's recommendations.
- C. Conform to general requirements of Caltrans Standard Specifications Section 84-3.05 as approved by Architect.
- D. Conform to the requirements of CBC, Title 24, Section 1129.B.5 and ADA.

3.03 PROTECTION

Provide traffic cones, barricades, and other devices needed to protect the paint until it is sufficiently dry to withstand traffic.

3.04 CLEAN AND ADJUST

When paint is thoroughly dry, visually inspect the entire application. Touchup as required to provide clean, straight lines and surfaces throughout.

END OF SECTION

SECTION 03 10 00 – CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SCOPE

- A. Design, furnish and install forms for concrete as indicated on drawings and specified here. Remove forms and shores at specified time. Clean up.

1.2 RELATED WORK (See also Table of Contents)

- A. Rough Carpentry: Section 06 10 00.
- B. Metal Fabrications: Section 05 50 00.
- C. Items relating solely to mechanical or electrical work are as shown on Drawings.
- E. Reinforcing Steel: Refer to the Drawings and Section 03 21 00.
- F. Cast-In-Place Concrete: Refer to the Drawings and Section 03 30 00.

1.3 QUALITY ASSURANCE

A. General:

1. Conform to all requirements of ACI 347 and as noted on the drawings.
2. Concrete formwork shall be designed and constructed to safely support fluid concrete and superimposed construction loads without excessive deflection or concrete leakage. Provide bracing to maintain accurate alignment and to resist all anticipated lateral loads. Forms shall conform with drawings as to shape, line, and dimension. Design, engineering and construction of forms shall be Contractor's responsibility. Formwork for exposed concrete shall be constructed to tolerances indicated in ACI 303R.
3. Cooperate and coordinate with other trades who furnish and/or install piping, conduit, reglets, anchors, inserts, sleeves, hangers, etc., as their work requires; including provisions for recesses and chases.

B. Submittals: (Submit under provisions of Section 01 30 00)

1. Product Data. Provide manufacturers data and installation instructions for the following:
 - a. Tie rods and spreaders.

- b. Formwork for exposed concrete.
- c. Form coatings and release agents.

C. Standards and References: (Latest Edition unless otherwise noted)

1. 2016 California Building Code (CBC).
2. "Recommended Practice for Concrete Formwork", ACI 347, American Concrete Institute, latest edition.
3. Standard Grading and Dressing Rules #17, West Coast Lumber Inspection Bureau (For Douglas Fir Form Lumber).
4. U.S. Product Standard PS 1-83 (For Plywood Form Lumber).
5. "Guide to Cast-In-Place Architectural Concrete Practice", ACI 303R, American Concrete Institute, latest edition.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Form Material (unless otherwise show on the drawings:

1. Smooth Concrete exposed to view: 5/8 inch minimum APA Plyform or steel.
2. Concrete concealed from view: 5/8 inch minimum APA Plyform, steel or clean and sound 1 x 8 Standard Grade Douglas Fir.

B. Form Clamps: Assembly to have cone washers, (1 inch break back) 3/8" inch center rod.

C. Form Ties:

1. Concrete exposed to view: Snap ties allowing full 1 inch break back.
2. Concrete concealed form view: Snap ties or wire.
3. Verify special spacing requirements with architectural drawings at exposed concrete.

D. Spreaders: Metal (no wood).

E. Form Coating: Non-grain and non-staining types of form coating that will not leave a residual matter on the face of the concrete or adversely affect proper bonding of any subsequent paint or other surface applications.

1. Form coating containing mineral oils or other non-drying materials will not be permitted for any concrete work.
- F. Joint Tape: No. 471 plastic film tape 3 inches wide, as manufactured by the Industrial Tape Division of 3M Company.
- G. Expansion Joint Filler (Preformed): ½ inch thick; Flexcell by Celotex Corporation, Elastic Fiber Expansion Joint by Phillip Carey Mfg. Co., or Sealtight Fiber Expansion Joint by W.R. Meadows, Inc.
- H. Extruded Polystyrene Foam: ASTM C578 type IV. Dow Chemical Corp. "Styrofoam", UC Industries "Foamular", or approved equal.

PART 3 - EXECUTION

3.1 FORM CONSTRUCTION

- A. Construct substantial forms to the shapes, lines, grades and elevations shown, sufficiently tight to prevent leakage of mortar, and tied, clamped and braced to prevent spreading, shifting or settling. Plywood joints shall be square and tight; plywood shall be arranged in such manner as to minimize number of joints and to provide a smooth, attractive finished concrete surface.
- B. Apply form coating to forms before reinforcing steel is in place.
- C. Sleeves, anchors and bolts, including those for angle frames, supports, ties and other materials in connection with concrete construction, shall be secured in position before the concrete is placed.
- D. Proper provisions shall be made for openings, blockouts, sleeves, offsets, sinkages, recesses and depressions required by other trades and suppliers prior to placing concrete.
 1. The Contractor shall also see that sleeves have been installed and other provisions have been made for the installation of mechanical, electrical and other equipment.
 2. Coordinate with all trades to insure proper placement of all items in forms and to provide proper blockouts wherever required.
- E. Concrete work out of alignment, level or plumb will be cause for rejection of the whole work affected and, if so rejected, such work shall be removed and replaced, as directed by Architect, with no additional cost to the Owner.
- F. Form Not Required: Concrete footings may be poured directly against cut earth where feasible and when the Architect's approval has been obtained.

1. See structural drawings for requirements for placing concrete footings directly against earth without forms.
- G. Use ¾ inch minimum wood chamfer strips typical at all exposed corners unless noted otherwise on drawings.

3.2 CLEANING OF FORMS

- A. All dirt, chips, sawdust, rubbish, water, etc. shall be completely removed from form by water hosing and air pressure before any concrete is deposited therein. No wooden ties or blocking shall be left in concrete except where indicated for attachment of other work.
- B. Thoroughly clean and patch all holes in formwork and re-coat as required before reusing. Forms not suited to obtain concrete surfaces and tolerances in conformity with Contract requirements will be rejected by Architect.
1. Reuse of forming materials shall be limited only as required to produce the finishes as specified, free from blemishes and other defects unless covered by other building materials in which case blemish free concrete is not required.

3.3 INSPECTION OF FORMS

- A. Notify the Architect at least 48 hours in advance of the beginning of pouring operations and at the completion of formwork and location of all construction joints. An inspection of forms and joints will be made for approval of finished work and general layout only. The foregoing inspection shall in no way relieve the Contractor of responsibility of design and safety of formwork, bulkheads and shorings.

3.4 REMOVAL OF FORMS AND SHORING

- A. Do not remove forms until concrete has attained sufficient strength to support its weight and any construction loading. Concrete must be allowed to cure long enough to avoid damage during form removal. Contractor or his representative in charge of concrete construction shall be present during removal of forms and shores, and shall be personally responsible for safety of this operation at all times and under all conditions.
- B. As a minimum, formwork and shoring shall remain in place for the following periods:
1. Concrete on grade: 24 hours
 2. Walls and Columns: 3 days

3. Formwork may be removed and reshores installed before the times indicated above, provided the concrete has cured sufficiently to avoid damage when formwork is removed. Shores must be immediately replaced with reshores in a sequence designed to avoid inducing stress in the concrete member.

3.5 ADJUSTING AND CLEANING

- A. Upon completion of this Work, clean up and remove from Site all equipment and debris resulting from this work.
- B. Surfaces to be painted shall be smooth and free of substances such as dirt, wax, excessive latence, grease or materials that would prevent proper bonding of finishes.
 1. Removal of foregoing contaminants, and complete removal of parting and curing compounds affecting proper paint bond, shall be responsibility of this Section of Work. Sandblast cleaning shall not be employed without specific approval of Structural Engineer.

- END OF SECTION -

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SECTION 03 21 00 – CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 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.

1.2 RELATED WORK (See also Table of Contents)

- A. Concrete Formwork: Refer to the Drawings and Section 03 10 00.
- B. Cast-In-Place Concrete: Refer to the drawings and Section 03 30 00.

1.3 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 CBC Section 1907, as minimum standards.
5. Allowable Tolerances:
 - a. Fabrication:
 - 1) Sheared length: 1 inch.
 - 2) Depth of truss bars: Plus 0., 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. American Concrete Institute (ACI).
 - a. ACI 301 - "Specifications for Structural Concrete for Buildings".
 - b. ACI 315 - "Details and Detailing of Concrete Reinforcing".
 2. 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”.
 3. Concrete Reinforcing Steel Institute (CRSI) - "Manual of Standard Practice".
 4. **2016** California Building Code (CBC).
- C. Submittals: (Submit under provisions of Section **01 30 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. One of the required submittal copies shall be reproducible transparency.
 - d. Any deviations from the contract documents must be clearly indicated as a deviation on the shop drawings.
 - e. 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. 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.
 2. When inspections are indicated for reinforcement placement on the Structural drawings, a special inspector shall be employed to inspect reinforcing placement. Refer to the Drawings.
 3. 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.
 4. 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.
 5. 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.

1.4 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 D12.1.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Reinforcement Bars: ASTM A615, Grade 40 for No. 3 and smaller bars; ASTM A615, Grade 60 for No. 4 and larger bars unless otherwise noted on the Drawings.

1. Bar reinforcement to be welded shall meet chemical requirements of ASTM A706.

B. Stirrups and Ties: ASTM A615, Grade 60 for No.4 and larger bars, ASTM A615, Grade 40 for No. 3 and smaller 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: As referenced on the Drawings.

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.
- B. Refer to the Drawings for additional information.

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 and Electrical Drawings: Refer to Mechanical and Electrical Drawings for formed concrete requiring reinforcing steel. All such steel shall be included under the work of this Section.

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SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 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 and railing stanchions as indicated on the Drawings and specified here.

1.2 RELATED WORK (See also Table of Contents)

- A. Concrete Formwork: Section 03 10 00.
- B. Reinforcing Steel: Section 03 21 00.
- C. Metal Fabrications: Section 05 50 00.

1.3 QUALITY ASSURANCE

- A. Standards and References: (Latest Edition unless otherwise noted)
 - 1. 2000 Uniform Building Code (UBC), Volumes 1, 2 and 3.
 - 2. 2016 California Building Code (CBC).
 - 3.. 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 JR Guide for concrete floor and slab construction
 - f. ACI 305R Hot Weather Concreting

- g. ACI 306 R Cold weather concreting
- h. ACI 318 Building Code Requirements for Reinforced Concrete

4. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- a. ASTM C 31 Making and Curing Concrete Test Specimens in the Field
- b. ASTM C 33 Concrete Aggregates
- c. ASTM C 39 Compressive Strength of Cylindrical Concrete Specimens
- d. ASTM C 42 Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
- e. ASTM C 94 Ready-Mixed Concrete
- f. ASTM C 143 Slump of Hydraulic Cement Concrete
- g. ASTM C 150 Portland Cement
- h. ASTM C 172 Sampling Freshly Mixed Concrete by the Volumetric Method
- i. ASTM C 192 Making and Curing Concrete Test Specimens in the Laboratory
- j. ASTM C 260 Air-Entraining Admixtures for Concrete
- k. ASTM C309 Liquid membrane forming compounds for curing concrete
- l. ASTM C 330 Lightweight Aggregates for Structural Concrete
- m. ASTM C 494 Chemical Admixtures for Concrete
- n. ASTM C494 Standard specifications for chemical admixtures for concrete
- 2. ASTM C979 Standard specifications for pigments for integrally colored concrete
- o. ASTM C 618 Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
- p. ASTM C157 Length Change of Hardened Hydraulic-Cement Mortar Concrete
- q. NRMCA - CIP5 Plastic shrinkage cracking

B. Submittals: (Submit under provisions of Section 01 30 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
 - 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. Tests and inspections shall be a required on the Drawings.
8. Refer to the Drawings and see Section 03 21 0 for reinforcing steel submittals.
9. Refer to the Drawings and see Section 03 21 00 for reinforcing steel tests and inspections.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Portland Cement: ASTM C 150, Type I or Type II. 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 as noted on the Drawings
 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 110 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 per UBC Section 1903.4.
- D. Admixtures shall be subject to prior approval by the Architect, in accordance with UBC Section 1903.6, 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. Water Resisting
 - a. Moxie 1800 Super Admix by Moxie International or approved equal formulated to resist moisture vapor migration and alkali efflorescence.
- E. Moisture and Vapor Barrier: Polyethelene sheeting not less than 8 mils thick, unless noted otherwise on drawings. Must be resistant to decay when tested per ASTM E154.
- 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.7

2.2 CONCRETE

- A. Concrete Mixes for ramps and stairs refer to the Drawings.

Strength: 3000 lbs. per square inch at 28 days.

Maximum Aggregate Size: 1-1/2 inch.

Cement Content: As determined by mix design (**UBC Section 1905.3**).

5.0 sacks per yard minimum.

Maximum Water to Cement Ratio: 0.60

Admixture: Water Reducing.

Weight: 145 lbs. per cubic foot

Use for unexposed foundation concrete except as otherwise specified. At Contractor's option, Type B concrete may be substituted for this.

Concrete: Use for concrete sidewalks, mechanical and electrical pads, miscellaneous non-structural slabs on grade.

Strength: 2500 lbs. per square inch at 28 days.

Maximum Aggregate Size: 1 1/2 inch.

Minimum Cement Content: as determined by mix design.

Maximum Water to Cement Ratio: 0.60

Admixture: Water reducing.

Weight: 145 lbs. per cubic foot.

- 4. Grout shall be non-shrink, non-metallic, flowable Type "713" or "928" by Master Builders.
 - 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.
 - c. Use for grouting **and/or drypacking of column base plates** other metal items (Section 05 50 00) and other locations as indicated on the Drawings
- 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. As noted on the drawings.
 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 3% air entrainment typical.
 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 referenced standards.

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 temperature is below 40 degrees F or is likely to fall below 40 degrees F during 24 hour period after placing, provide adequate equipment for heating concrete materials. No frozen materials or materials containing ice shall be used. Temperatures of separate materials, including mixing water, when placed in mixer shall not exceed 100 degrees F. When placed in forms concrete shall have a temperature between 50 degrees F and 85 degrees F.
7. **Hot Weather Batching:** Concrete deposited in hot weather shall have a placing temperature below 85 degrees F. If necessary, ingredients shall be cooled to accomplish this.

2.3 FLOOR LEVELING AND FILL MATERIALS

- A. Epoxy Concrete Mortar: Floor leveling, non-shrink trowel applied epoxy concrete mortar; TPM 115 General Polymers Corp., A-H Emery Epoxy Topping #170 Anti-Hydro Corp., or approved equal, where areas to fill are less than 1/4 inch thick.
- B. Concrete Mortar: Floor leveling, patching and repair, non-shrink trowel applied concrete mortar; Master Builders EMBECO 411-A, Euclid EUCO, or approved equal, where areas of fill are greater than 1/4 inch thick.
- C. Cementitious Floor Leveling Material: Shall be self-leveling or trowelable with a minimum 28 day compressive strength of 3000 psi in accordance with ASTM C-109. Material shall be equal to Quickrete No. 1249, Ardex V-800/K-55, Mapei "Ultra/Flex" or approved equal.

PART 3 - EXECUTION

3.1 PLACEMENT

- A. Unless otherwise noted on the Drawings, placement of concrete shall be as follows:
- B. 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 Architect has observed formwork and reinforcement. 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 Architect 48 hours in advance of concrete pour.
- C. 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.
- D. 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 Architect. 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 85 degrees F. 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.
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 air temperature falls below 40 degrees F., as approved by Architect. Concrete placed in freezing temperatures shall have a temperature of not less than 50 degrees F. Maintain this temperature for at least 7 days. No chemicals or salts shall be used to prevent freezing and no accelerating agents shall be used without prior approval from Architect.
- E. 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 rest exclusively with 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.

F. Concrete Slabs on Grade:

1. Exterior concrete slabs on grade shall be poured as required under this Section. Base shall be accurately leveled and dampened (but not saturated) prior to placing of concrete.
2. Typically, interior slabs on grade shall be poured over a two (2 inch) inch thick layer of sand, over a vapor barrier and over a minimum of four (4 inch) inches, unless otherwise indicated, of compacted gravel. Lap all joints of vapor barrier a minimum of six (6 inch) inches.

G. 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 poured in a checkerboard pattern 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.

H. Expansion Joints - Slabs on Grade:

1. Unless otherwise indicated, use 3/8 inch thick expansion joint filler. See Section 2.01 H

2. Joints in interior slabs on grade shall be in locations indicated, or, where not indicated, locate joints at uniformly spaced intervals not exceeding 100 feet.
3. Joints in exterior slabs on grade shall be installed at each side of structures, at curb transitions opposite apron joints, at ends of curb returns, at back of curb when adjacent to sidewalk, and at uniformly spaced intervals not exceeding 20 feet.
4. Edges of concrete at joints shall be edger finished to approximately 3/8 inch radius.
5. Interrupt reinforcing at all expansion joints.
- I. Score markings on exterior slabs on grade shall be located as indicated. Where not indicated, mark slabs into rectangles of not less than 12 square feet nor more than 20 square feet using a scoring tool which will leave edges of score markings rounded.

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. 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.
 2. 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.
3. 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 unless otherwise noted on the Drawings shall be as follows:
 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. Finished surfaces of all interior integral finished flatwork shall be sufficiently even to contact a 10' long straightedge with a tolerance of 1/8 inch.

c. 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 quantities 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. “500 psi” and “85 percent” reduction in UBC Section 1905.6.4.1 and 1905.6.4.4 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 –

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SECTION 05 50 00 – MISCELLANEOUS METALS

PART 1 - GENERAL

1.1 SCOPE

- A. Shop fabricated metal items and miscellaneous metal work.
- B. Provide all miscellaneous metal shapes and plates, **including structural metal shapes**, sheet metal 10 gauge and heavier and carpenter's iron 10 gauge and heavier.
- C. Furnish anchor bolts, inserts and other connections for miscellaneous metal and other miscellaneous metal installed in cast-in-place concrete.
- D. Furnish and/or fabricate metal pipe handrails and guardrails as indicated on the Drawings and as specified here.
- E. Provide fabrication, shop and field welding, bolting and priming of miscellaneous metal.

1.2 RELATED WORK (See also Table of Contents)

- A. Wheelchair Ramp: Section 05 51 16.

1.3 QUALITY ASSURANCE

- A. Standards and References: (Latest Edition unless otherwise noted)
 - 1. 2016 California Building Code (CBC)
 - 2. American Society for Testing and Materials (ASTM) Specifications as listed in the Section.
 - 3. The "Metal Stairs Manual" as published by the National Association of Architectural Metal Manufacturers, current edition. Qualifications for the Design, Fabrication and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction (AISC).
 - 4. "Code for Welding in Building Construction" of the American Welding Society.
 - 5. Conflicting Requirements: In the event of conflict between pertinent codes and regulations and the requirements of the referenced standards or these Specifications, the more stringent shall govern.
 - 6. Qualifications of Welders: Use only American Welding Society (AWS) certified

welders qualified to perform types of welding required.

1.4 SUBMITTALS

A. Submittals: (Submit under provisions of Section 01 30 00)

1. Shop Drawings: Submit shop drawings indicating profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevation, and details where applicable. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
2. Manufacturer's descriptive data: Submit for manufacturer's items.

1.4 DELIVERY, STORAGE AND HANDLING

- ##### A. Deliver all parts ready for erection; store in close proximity to final locations.

PART 2 - PRODUCTS

2.1 MATERIALS

- ##### A. Steel Sections: ASTM A36.
- ##### B. Steel Tubing: ASTM A500, Grade B.
- ##### C. Steel Pipe: ASTM A53, Type E or S, Grade. B.
- ##### D. Steel Bolts, Nuts, and Washers: ASTM A307.
- ##### E. Welding Materials: AWS D1.1; type required for materials being welded.
- ##### F. Galvanizing: Hot-dip process ASTM A153 performed after fabrication into largest practical section. Weight of coating not less than 2 oz. per sq. ft. of surface. Where damaged, repair surface with one coat of hot process galvanizing repair compound, "Galvalloy", Galvweldalloy", or approved equal.
- ##### G. Primer: Tnemec Company "69 Special Red Primer", Rust Oleum Corporation "1069 Heavy Dusty Rust Inhibitor Red Primer", Sherwin-Williams "Kern Kromick Primer"; or approved equal.
- ##### H. Dissimilar Materials: Separate dissimilar surfaces in contact with or in close proximity to non-compatible metals, concrete masonry, or plaster with neoprene gasket; or other approved means.
- ##### I. Expansion Bolts: Hilti "Kwik Bolt II" Expansion Anchor Bolts, galvanized unless

otherwise indicated.

- J. Non-shrink Grout: Master builders 928 or equal
- K. Adhesive Anchors: Shall consist of anchor rod with nut and bolt assembly and adhesive cartridge system at only those masonry locations as indicated on the Drawings. "Hilt" HVA adhesive anchors (I.C.B.O. Report No. 4016), Molly Parabond adhesive anchors (I.C.B.O. Report No. 3910), or approved equal.
- L. Safety Nosings:
 - 1. For poured-in-place concrete stairs, provide safety nosings constructed of 6063-T5 aluminum nosing base material with a colored epoxy/abrasive filler that shall fully extend over a curved front edge a minimum of 1/2". The safety nosings shall be 3" wide and shall run the full length of tread.
 - a. Acceptable manufacturers and models of safety nosings are American Safety Technologies DSA3; Wooster Products, Inc. B WP3C; Balco, Inc. H-300; or approved equal.
 - 2. Colors of nosings shall be as selected by Architect from manufacturer's full range of colors.

2.2 MISCELLANEOUS ITEMS

- A. Provide all miscellaneous steel shapes, braces, supports, anchors, bolts, etc., not specified or shown elsewhere, but required for erection and completion of work, including miscellaneous metal items shown under mechanical or electrical work, except as specifically noted otherwise.
 - 1. Metal backing plates, anchor plates, etc. required for anchorage of mechanical and electrical fixtures and equipment to lightgauge metal framing shall be furnished and installed by those trades.
 - 2. Miscellaneous metal items embedded in concrete shall be furnished to the respective trades for installation there under. Furnish setting templates and/or proper execution of work.

2.3 FABRICATION

- A. Verify dimensions on site prior to shop fabrication.
- B. Fabricate items with joints tightly fitted and secured.

- C. Fit and shop assemble in largest practical sections, for delivery to jobsite.
- D. Grind exposed welds flush and smooth adjacent finished surfaces. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
- F. Make exposed joints butt tight, flush and hairline.
- G. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.
- H. Fabrication and welding shall be in accordance with referenced standards.
- I. Galvanizing shall conform to ASTM A-123-G90 coating.
- J. Welded Joints: All welds shall be full length or perimeter of joint or seam. Welded-in butt joints shall be V-groove type ground flush with surface. Grind all exposed welds smooth.
- K. Surface Finish: All exposed surfaces, corner, edges, etc., of items and assemblies shall be smooth, free of sharp points and edges.
- L. Rough Hardware:
 - 1. Provide bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and for anchoring or securing framing to concrete and other structures.
 - 2. Manufacture or fabricate items to sizes, shapes, and dimensions required.
- M. After fabrication, thoroughly clean steel of all loose mill scale, rust splatter, slag or flux deposits, oil, dirt, and other foreign matter.
- N. After cleaning, except where other finishes are specified, all ferrous metal shall be given one shop coat of specified primer. Parts inaccessible after assembly or erection shall be given two coats of specified primer; second coat darker in color.

2.4 ASSEMBLIES:

- A. Fabrication, materials and installation shall be as indicated and as specified. Assemblies

- include, but are not limited to the following. Examine Drawings for additional work required.
- B. Angle frames and supports attached to or embedded in concrete construction shall be galvanized after fabrication.

2.5 FINISH

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do not prime surfaces in direct contact bond with concrete or where field welding is required.
- C. Prime paint interior items with one coat unless scheduled to be galvanized.
- D. Galvanize exterior items and scheduled interior items to minimum 2.00 oz/sq ft zinc coating.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Obtain Architect's approval prior to site cutting or making adjustments not scheduled.
- B. Clean and strip primed steel items to bare metal where site welding is scheduled.
- C. Make provision for erection loads with temporary bracing. Keep work in alignment.
- D. Supply items required to be cast into concrete with setting templates, for installation under appropriate Sections.

3.2 INSTALLATION

- A. Install miscellaneous metals and accessories in accord with reviewed Shop Drawings, referenced standards, or as directed by the Architect.
- B. Install items plumb and level, accurately fitted, free from distortion or defects.
- C. Perform field welding in accordance with AWS D1.1. Comply with AWS Code for procedures of manual shielded metal arc welding, appearance, and quality of welds made, and methods of correcting welding work.
 - 1. Touch up damaged areas in shop primed surfaces which will be concealed after

erection. Leave in condition fit for finish painting by other trades.

- D. After installation, touch-up field welds, scratched or damaged surfaces with primer, except repair exposed galvanized work (not to be painted) with hot process field galvanizing, in accord with manufacturer's published directions. Clean field welds, bolts connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply brush or spray to provide minimum dry film thickness of 2.0 mils.
- E. Provide isolation of dissimilar metals from contact with one another with two coats of primer or approved equal isolation system.
- F. Repair or replace defective materials as directed.
- G. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction including threaded fasteners for concrete inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
 - 1. Adhesive anchors shall only be used at locations where detailed or as noted on the Drawings.
- H. Setting loose plates:
 - 1. Clean concrete bearing surfaces of any bond-reducing materials, and roughen to improved bond to surfaces. Clean the bottom surface of bearing plates.
 - 2. Set loose leveling and bearing plates on wedges, or other adjustable devices.
 - 3. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims; but if protruding, cut off flush with the edge of the bearing plate before packing with grout.
 - 4. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.
- I. Cutting, fitting, and placement:
 - 1. Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications.
 - 2. Set work accurately in location, alignment, and elevation, and make plumb, level, true, and free from rack, measured from established lines and levels.
 - 3. Provide temporary bracing or anchors in formwork for items which are to be built into

concrete or similar constructions.

4. Fit exposed connections accurately together to form tight hairline joints.
 5. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations.
 6. Grind exposed joints smooth, and touch up shop paint coat. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.
- J. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction including threaded fasteners for concrete inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
1. Adhesive anchors shall only be used at concrete block only and only at locations where detailed.

K. Railings:

1. Furnish post setting sleeves to concrete trade; direct and supervise proper setting and location of sleeves.
2. Set railing posts and grout between posts and setting sleeves with non-shrink grout.

3.4 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.5 SCHEDULE

- A. Provide and install items listed in Schedule and shown on Drawings with anchorage and attachment necessary for installation. The following Schedule lists principal items only. Refer to drawing details for items not specifically scheduled.
 1. Miscellaneous plates or angles not attached to structural steel; complete with anchorage for embedment.

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SECTION 05 51 36 - WHEELCHAIR RAMP

PART 1 - GENERAL

1.01 SCOPE

- A. Provide all materials, labor, equipment and services necessary to furnish, deliver and install all work under this section as shown on the contract documents, specified herein, and as required by the job conditions.
- B. Steel ramp system is specified. Equivalent aluminum ramp systems require preapproval and will be evaluated by the City.

1.02 RELATED WORK

- A. Section 03 10 00: Poured-in-Place Concrete

1.03 QUALITY ASSURANCE

- A. The approved manufacturer's recommended installation procedures will become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.
- B. Catalog Standards:
 - 1. Manufacturer's catalog numbers may be shown on Drawings for convenience in identifying specified items. Unless modified by notation on Drawings or specified, catalog description for indicated number constitutes requirements for the item specified.
 - 2. The use of catalog numbers and specified requirements set forth in Drawings and Specifications does not preclude use of any other manufacturer's products or procedures which may be equivalent. Such numbers and requirements establish standards of design and quality for materials, construction, and workmanship.
- C. Manufacturer Qualifications. Manufacturer shall have produced the types of ramp systems required for not less than 5 (five) years, with not less than 5 (five) similar projects.

1.04 STANDARDS:

- A. Wheelchair ramp system shall be in accordance with the 2016 CBC, California Building Code and Americans with Disabilities Act (ADA).

1.05 SUBMITTALS

- A. Refer to Section 01 30 00 for submitting the following:
1. Installation instructions. Submittal required.
 2. Shop Drawings: Furnish shop drawings for architect's approval. Include elevations, sections and details indicating dimensions, materials, finish, conditions for anchoring and support for each ramp section.
 3. Product literature: Submit manufacturers literature describing the product to be used under this section.
 4. Furnish complete information describing the materials devices and procedures to be followed in maintaining all ramps under this section.
 5. Maintenance Instructions.
 6. Engineering: Provide wet stamped Professional Engineering drawings upon request.
 7. Color samples for color selection.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends intact. Store on site secure from weather, soil and physical damage.
- B. Transport, handle and store in strict accordance with the manufacturer's recommendations.

1.07 PROJECT CONDITIONS:

- A. Products shall be available at project when required for installation so as not to delay job progress. Installer for these products shall cooperate with installers performing work under other Sections involved to effect proper installation.

1.08 WARRANTY:

- A. Furnish three (3) year written warranty. Upon notice within the warranty period, defects in materials or workmanship shall be repaired or replaced at no cost to the owner. Ramp finishes are not included under the warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS AND MODELS:

- A. Amramp Pre-Manufactured Metal Ramp System Specifications – Pro Series (specified).
- B. Equivalent by National Ramp Commercial Ramp System
- C. Equivalent by American Access Entrada Commercial Ramp System
- D. Or approved equal.

2.02 ENGINEERING:

- A. Ramp sections shall be designed for a minimum uniform live load of 100 pounds per square foot and a concentrated vertical load of 300 pounds distributed uniformly over an area of one square foot.

2.02 MATERIALS:

- A. Ramp section frames and joists shall be all fireproof steel ASTM A572-50
- B. Tek screw fasteners shall be zinc plated grade 5 steel. Other hardware shall be grade 2 or higher
- C. Ramp section decking shall be 1/2 #13 raised expanded metal
- D. Marine coatings(3), prime and paint, shall be oven cured. Ramp surface paint shall have Amramp grip additive for slip resistance.

2.03 DESIGN:

- A. Ramp Sections shall be fabricated in 43” and 55” widths.
- B. Standard lengths are 6 ft. or less.
- C. Custom widths and lengths as indicated on the Drawings.
- D. Ramp sections shall be designed for a 12:1 slope
- E. Walking surface shall be continuous with no gap greater than 3/8”.

- F. Ramp sections shall be guarded by pickets.

2.04 LANDINGS:

- A. Landings shall be designed for a minimum uniform live load of 100 pounds per square foot and a concentrated vertical load of 300 pounds distributed uniformly over an area of one square foot.
- B. Landing frames and joists shall be all steel ASTM A572-50.
- C. Tek screw fasteners shall be zinc plated grade 5 steel. Other hardware shall be grade 2 or higher.
- D. Landing decking shall be 1/2 #13 raised expanded metal.
- E. Marine coatings, prime and paint, shall be oven cured. Ramp surface paint shall have Amramp grip additive for slip resistance.
- F. Design:
 - 1. Landings shall be fabricated 1'x5', 2'x5', 3'x5', 5'x4', and 5' x 5' minimum sections.
 - 2. Custom widths and lengths fabricated as indicated on the Drawings.
 - 3. Landings shall be designed for variable heights.
 - 4. Walking surface shall be continuous without gaps.
 - 5. Landings shall be guarded by pickets.

2.05 LEGS:

- A. Engineering:
 - 1. The legs shall support the ramp and/or landing section design loads.
 - 2. For uneven grades, extra length legs shall be provided so legs may be field adjusted to match slope.
- B. Materials:
 - 1. Legs up to 24", shall be 1-1/4"x1-1/4"x12 ga, 80 ksi steel.
 - 2. Legs above 24" shall be 1-1/4"x1-1/4"x12 ga. 80 ksi steel, braced.
 - 3. All legs shall have 4" x 4" footpads to prevent settling.
 - 4. Fasteners will be TEK screws, grade 5 equivalent, Zn coated steel.
 - 5. Marine coatings, prime and paint, shall be oven cured.
- C. Design
 - 1. Legs shall be perpendicular to the ground.
 - 2. Legs taller than 24" shall be braced.
 - 3. Each leg shall be adjusted independently.
 - 4. Footpads shall be installed to protrude under the ramp, eliminating trip hazards.

2.06 HANDRAILS:

- A. Engineering:
 - 1. Handrails and assemblies shall be designed to resist a load of 50 lb/ft (pound- force per linear ft) applied in any direction at the top and to transfer this load through the supports to the structure.
 - 2. Handrails and assemblies shall be able to resist a single concentrated load of 200 lbs. applied in any direction at any point along the top, and have attachment devices and supporting structure to transfer this loading to appropriate structural elements. Note: The above loading shall not be applied simultaneously.
- B. Materials:
 - 1. Handrails shall be all galvanized steel 1-1/4" diameter steel tubing fabricated from ASTM A500, Grade B steel
 - 2. Handrails shall be galvanized finish with polymer coating.
 - 3. Handrails shall be 14 ga wall.
- C. Design:
 - 1. Handrail gripping surface shall be smooth and continuous.
 - 2. Handrail shall be not less than 34" or more than 38" above ramp or landing surface measured vertically from the ramp surface.

2.07 PICKET GUARDS:

- A. Engineering:
 - 1. Picket guards and assemblies shall be designed to resist a load of 50 lb/ft (pound- force per linear ft) applied in any direction at the top and to transfer this load through the supports to the structure.
 - 2. Picket guards and assemblies shall be able to resist a single concentrated load of 200 lbs. applied in any direction at any point along the top, and have attachment devices and supporting structure to transfer this loading to appropriate structural elements. Note: The above loading shall not be applied simultaneously.
- B. Materials:
 - 1. Picket guard frames shall be 1-1/2"x1-1/2"x14 ga, 80 ksi steel.
 - 2. Picket guard balusters shall be 3/4"x3/4" x16 ga solid wall tube, A500, Grade B, welded to the frames.
- C. Design:
 - 1. Picket guards shall not be less than 42" above the ramp or platform surface, measured vertically and shall form a protective barrier through which a 4" sphere shall not pass.

2.08 COLORS:

- A. Colors shall be as selected by the Architect from the manufacturer's full range of available colors. There shall be no additional costs to the Owner for selection of colors other than white.

2.10 MISCELLANEOUS ITEMS:

- A. Provide all miscellaneous fasteners, brackets, supports, connectors and accessory items as indicated on the Drawings or as required by the product manufacturer for a complete and proper installation of the materials, products or systems specified in this Section.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Prior to installation of the work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 INSTALLATION:

- A. Install Wheelchair ramp system in strict compliance with original design, manufacturer's recommendations, and reviewed Shop Drawings.

3.03 PROTECTION:

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- C. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

3.04 ADJUSTING AND CLEANING:

- A. Upon completion of installation, remove manufacturer's temporary labels, marks of identification. Thoroughly wash surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable condition. Replace damaged parts and surfaces which are not free from imperfections.
- B. Touch up damaged areas in shop primed surfaces which will be concealed after erection. Leave in condition fit for finish painting by other trades. Repair or replace defective materials as directed. Lubricate hardware and leave entire installation clean and in good operation condition.

3.05 OPERATING AND MAINTENANCE INSTRUCTIONS:

- A. Upon completion of installation and as a condition of its acceptance, instruct Owner's personnel as Owner directs in the operation and maintenance of all wheelchair lift equipment.

-END OF SECTION-

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SECTION 06 10 00 – ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SCOPE

A. Provide all labor, materials, tools, facilities and equipment required for the fabrication and installation of rough carpentry and associated items (except that which is specified elsewhere) indicated on Drawings and necessary to complete the Work. Items include, but are not necessarily limited to, the following:

1. Blocking, backing, stripping, furring, and nailers.
2. Rough hardware.
3. Plywood sheathing.
4. Preservative treatment.

1.02 RELATED WORK (See also Table of Contents)

A. Miscellaneous Metals: Section 05 50 00.

1.03 QUALITY ASSURANCE

A. General:

1. Coordinate the work of all trades to ensure proper placement of all materials, anchors, etc., as well as providing for openings and anchors for the installation of surface mounted materials and equipment.
2. Qualifications for Workmen: Provide sufficient skilled workmen and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
3. Rejection: In the acceptance or rejection of rough carpentry, no allowance will be made for lack of skill on the part of the workmen.

B. Standards and References: (Latest Edition unless otherwise noted)

1. 2016 California Building Code (CBC)

2. Lumber: West Coast Lumber Inspection Bureau (WCLIB); Rule 17, Standard Grading Rules for West Coast Lumber.
 3. Lumber: Western Wood Products Association (WWPA); Standard Grading Rules for Western Lumber.
 4. Redwood: Redwood Inspection Service (RIS); Standard Specifications for Grades of California Redwood Lumber.
 5. Plywood: The Engineered Wood Association; Specifications and Grades.
 - a. Structural Plywood: United States Product Standard PS1, Group 1 Douglas Fir.
 - b. APA rated sheathing: United States Product Standard PS2.
 6. Wood Preservative: American Wood Preservative Bureau (AWPB):
 - a. Standard for Softwood Lumber, Timber and Plywood Pressure Treated with Volatile Petroleum Solvent (LPG) Penta Solution for Above Ground Use.
 7. 1991 National Design Specification for Wood Construction (NDS).
- C. Submittals: (Submit under provisions of Section 01 30 00)
1. Certification:
 - a. Preservative Treated Wood: Certification for waterborne preservative and that moisture content was reduced to 19% maximum, after treatment.
- D. Tests and Inspections:
1. If indicated on the structural drawings, load test expansion and epoxy anchors as indicated.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protection:

1. After delivery, store all materials off the ground, covered, and in such a manner as to ensure proper ventilation and drainage and to protect against damage and the weather. Maintain wood at the maximum moisture levels indicated in Materials Section.
2. Keep all material clearly identified with all grade marks legible; keep all damaged material clearly identified as damaged, and separately store to prevent its inadvertent use. Do not allow installation of damaged or otherwise non-complying material.
3. Use all means necessary to protect the installed work and materials of all other trades.

4. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sawn Lumber:

1. Lumber (Wood Framing): Meet requirements of following minimum grades. All grades to WCLIB Grading Rules #17. Species shall be Douglas Fir - Larch

<u>Item</u>	<u>Sizes</u>	<u>Grade</u>	<u>Maximum Moisture</u>		<u>Notes</u>
				<u>Content at Initial Use</u>	
Plates	2x	No. 2		19%	See "Wood Treatment"
Blocking & Nailers	2x	Construction		19%	
Blocking & Nailers	3x,4x,6x	Construction		30%	
Backing & Stripping	2x,3x 4x,6x	Construction		30%	
Furring	2x,3x 4x,6x	Construction		30%	

2. "At initial use" shall be that point at which nails, screws, bolts, split rings, shear plates or other fasteners or the holes for said fasteners are placed in the wood.
3. All sawn lumber is assumed to be enclosed in the dry building envelope in the final service condition, unless noted otherwise, and free to dry to moisture content less than 19%.
4. The Contractor shall use whatever means necessary, including site drying to ensure that the moisture contents above are not exceeded.
5. All studs, plates, joists, rafters and beams shall be free of heart center in accordance with the specified grading standards.

B. Wood Sheathing:

1. Sheathing: PS1 and PS2 APA rated sheathing with exterior glue. Thickness type and grade shall be as indicated on Drawings.
 2. Where indicated on the architectural drawings as interior wall backing behind ceramic tile locations and in all toilet rooms behind sheet rock, to be A-C APA rated sheathing with exterior glue. Thickness to be 5/8" at all locations.
- C. Building Paper: Fed. Spec. UU-B-790a, Type I, Grade B (15 lb. min./ 30 lb. where noted or specified.).
- D. Rough Hardware Fastenings and Connections: All types including bolts, lag screw, nails, spikes, screws, washers and other rough hardware, of kinds that may be purchased and that require no further fabrication, shall be furnished and installed for all finish and rough carpentry and shall conform to 1991 NDS Standards and dimensions. All exterior hardware shall be hot-dipped galvanized per ASTM A123 Standards.
1. Common wire nails or spikes unless noted otherwise on the drawings. Penetration of nails or spikes shall be one-half the length of the nail or spike into the piece receiving the point. However to connect pieces 2" in thickness, 16d nails shall be used unless noted otherwise. Bore holes for nails wherever necessary to prevent splitting. Use finish or casing nails for finish work, Nails for exterior wood trim shall be galvanized. Box nails and sinker nails are not permitted. Vinyl coating is permitted on common nails.
 2. Bolts: Bolts shall conform to ASTM A307, grade A, Hex Head of sizes indicated. Holes shall be 1/16" larger than bolt diameter. Drive fit with washers under nuts. Malleable or plate washers shall be used where bolt heads or nuts bear on wood.
 3. Lag bolts: Shall be screwed (not driven) into place. For the shank portion, holes shall be bored the same depth and diameter as shank. For threaded portion, holes shall be between 60% to 75% of the shank diameter. Tighten all bolts and screws before closing in. Use galvanized bolts wherever indicated. All bolt and lag bolt heads to be hex head where exposed. Bolts shall conform to ASTM A307, Grade A, Hexagonal heads, unless noted otherwise.
 4. Washers: Washers for bearing against wood shall be provided under all bolt heads and nuts.. Steel washers shall have a thickness not less than 1/10 the length of the washer's longest side. Malleable iron washers shall have a bearing surface for the nut or head equal in diameter to not less than the long diameter of the nut or head.
 5. Powder Driven Fasteners: Tempered steel pins with special corrosive resistant plating or coating. Pins shall have guide washers to accurately control penetration. Fastening shall be accomplished by low-velocity piston-driven power activated tool. Pins and

tool shall be as manufactured by Hilti Fastening Systems. See Drawings for size, type and embedment.

6. Expansion Bolts: Hilti Fastening Systems "Kwik-Bolt Concrete Expansion Anchors" to concrete; Ramset "Dynabolt Sleeve Anchors" to masonry or approved equal.

2.02 FABRICATION

A. Lumber:

1. All lumber shall be air or kiln-dried to the maximum moisture content indicated in Materials Section.
2. Furnish S4S unless otherwise noted.
3. Size to conform with rules of governing standard. Sizes shown are nominal unless otherwise noted.

B. Wood Treatment:

1. Preservative Treatment: The treating process and results thereof shall meet AWWA Standards as indicated in CBC Section 2304A.3.
2. After treatment and prior to shipping, air or kiln-dry lumber to maximum 19 percent moisture content.
3. All treated wood shall bear the manufacturer's preservative treated trademark.
4. The amount of preservative to be injected into the wood shall be as recommended by the manufacturer for each type of installation.
5. All wood in contact with concrete or masonry shall be preservative treated.
6. Apply two coats of same preservative used in original treatment to cut surfaces and bored holes.

- C. Fire Treatment: All wood shall be identified with a UL Label certifying the required classification. The treating process and results thereof shall meet UBC Standard 23-5 as applicable in all above ground weather protected locations. Treater shall submit design and fastener valves for treated wood to Structural Engineer for review. See CBC Section 2304A.5. See Drawings for location of fire treated wood.

2.03 SOURCE QUALITY CONTROL

- A. Grade Mark each piece of lumber. Marking must be done by recognized agency.
 - 1. Douglas Fir shall bear WCLIB grade stamp.
 - 2. Pressure treated Douglas Fir shall bear AWWPA Quality mark. Cuts and holes shall be pre-treated.
- B. Wood Sheathing: Each panel shall be legibly identified as to type, grade and specie by APA grade. If plies are spliced, the slope of the scarf shall not be steeper than 1:8. White pockets will not be permitted in face plies.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Inspection:
 - 1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly proceed.
 - 2. Verify that rough carpentry may be performed in strict accordance with the original design and all pertinent codes and regulations.
- B. Discrepancies: In the event of discrepancy, immediately notify Architect. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 WORKMANSHIP

- A. General: All rough carpentry shall produce joints true, tight, and well nailed with all members assembled in accordance with the Drawings and with all pertinent codes and regulations.
- B. Selection of Lumber Pieces: Carefully select all members. Select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections. Cut out and discard all defects which will render a piece unable to serve its intended function.
- C. Lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
- D. Shimming: do not shim any framing component.

- E. Care shall taken than notching and boring of members is in strict conformance with the Drawings and that there are no overcuts.

3.03 FASTENING

- A. Nailing: Except as otherwise indicated on Drawings or specified, all nailing shall be as required by CBC Table No. 23-II-B-1 Nailing Schedule.

- 1. Nails or Spikes shall be common wire unless noted otherwise. Penetration of nails or spikes shall be one-half the length of the nail or spike into the piece receiving the point. However, to connect pieces 2" in thickness, 16d nails shall be used unless noted otherwise.
 - a. Bore holes for nails wherever necessary to prevent splitting.
 - b. Use finish or casing for finish work.
 - c. Use of nailing guns must be approved by Structural Engineer. Submittal of guns and nails is required. Nails installed with nail guns shall not penetrate into the outer plies deeper than hand nailing.

- B. Bolts: Bolts shall be sizes indicated. Holes for bolts shall be 1/16" larger than the bolt. Drive fit with washers under nuts. Malleable or plate washers shall be used. Cut washers are not permitted. Lag screws shall be screwed (not driven) into place for the shank, holes shall be bored the same depth and diameter as shank. For threaded portion, holes shall be between 60% and 75% of the shank diameter. Tighten all bolts and screws before closing in.

- C. Framing Devices: As specified under Products, sizes as indicated. Use half-length nails where required.

3.04 MISCELLANEOUS HARDWARE

- A. All other hardware indicated or required but not specified elsewhere shall be furnished and installed hereunder, including appropriate screws or other fastening devices.

3.05 MISCELLANEOUS CARPENTRY WORK

- A. Miscellaneous Carpentry Work not included under other sections shall be indicated or required but not specified elsewhere shall be furnished and installed hereunder, including appropriate screws or other fastening devices. Contractor shall provide miscellaneous carpentry work for all sections and divisions of work identified.
- B. Miscellaneous Carpentry Work not included under other sections shall be furnished and installed hereunder as indicated. Carefully locate and securely anchor items furnished by

other trades or under other sections of these specifications to the structure or structural framing.

- C. Wood Curbs for Equipment: Construct all wood curbs for roof mounted equipment as detailed. Provide all miscellaneous blocking, bracing, supports, and other wood items as shown or required to complete the work. Provide all wood framed openings thru structural system where pre-fab metal curbs, equipment, etc. is to be located on roofs, platforms, through walls, or any other framed component of the structure.
- D. Plywood Backing for Electrical, telephone, and similar types of wall mounted equipment shall be provided hereunder where required. Plywood shall be 3/4" thick exterior A-C plywood with 'A' face exposed.
- E. Shoring and Bracing: Shore or brace for temporary support of all work as required during the construction period except any shoring and bracing specified and included under other sections of these specifications.
- F. Temporary Enclosures: Provide and maintain all barricades and enclosures required to protect the work in progress.
- G. Protect all work in progress and all work installed, as well as the work of all other trades. Any work damaged as a result of the work under this section shall be corrected to its original condition or replaced if directed by the Architect at no increase in cost to the Owner.

3.06 MISCELLANEOUS WORK

- A. All miscellaneous work and materials not otherwise specified or included under other sections of these specifications shall be furnished and installed hereunder.
- B. Install all items under other sections specified to be furnished and installed in other sections which relate to the rough carpentry work.

END OF SECTION

SECTION 06 30 00 - FINISH CARPENTRY

PART 1 - GENERAL

1.01 WORK INCLUDED

Provide complete finish carpentry and millwork as indicated on the Drawings and specified herein.

1.02 RELATED WORK

- A. Section 06 10 00: Rough Carpentry.
- B. Section 06 40 00: Architectural Casework.
- C. Section 08 21 00: Wood Doors
- C. Section 09 90 00: Painting.

1.03 SUBMITTALS

- A. Refer to Section 01 30 00.
- B. Shop drawings: Submit shop drawings showing details of all millwork and mill instructions for all work being prepared by mill.
- C. List of materials: Submit list of all materials proposed to be used including fasteners, sealants and adhesives.
- D. Samples: Submit for approval when specifically requested.

1.04 JOB MEASUREMENTS

Take as necessary for proper fitting. Report discrepancies between Drawings and field dimensions to the Architect before fabrication.

1.05 DELIVERY

Do not deliver millwork to job until building is in proper condition and arrangements have been made to properly handle, store and protect such work.

1.06 STANDARDS

Manufacture millwork in accordance with standards (latest revision) of Woodwork

Institute, (Latest) Edition, Manual of Millwork (WI) in Grade or Grades hereinafter specified except as modified on Drawings.

1.07 MOISTURE CONTENT OF MILLWORK

Between 6 and 12 percent, consistent with average atmospheric conditions at project location.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Interior trim and Base: WI, Section 4, Birch unless otherwise noted, Custom Grade, transparent finish. Grades and species as recommended in WI where not indicated.
- B. Solid plastic adhesive and sealant: Use only adhesives and sealant as recommended by manufacturer for proposed application.
- C. Caulking: Vulcatex, Kaukit, or approved equal, gun grade.
- D. Fasteners:
 - 1. Nails: Hot-dipped galvanized for all exterior work. Bright finish finishing nails for all interior work.
 - 2. Bolts: Machine bolts, unless noted otherwise.

PART 3 - EXECUTION

3.01 MILLING

- A. Mill to dimensions and profiles shown. Except where exact length can be determined, material shall be provided long for cutting and fitting in field.
- B. "Back out" reverse side of trim when 5/8 inch or more thick or 1-5/8 inches or more wide.

3.02 INSTALLATION

- A. Do not install millwork until wet operations are completed and concrete, work has thoroughly dried out, and millwork has been primed or sealed under "Painting Work". Reseal cut edges, surfaces and ends in approved manner.
- B. Trim members: Install level, plumb and true, with members neatly and accurately

scribed in place. Install standing trim in single lengths, running trim in as long lengths as practicable for species specified. Butt joints beveled together, exterior angles coped. All wood trim shall be backprimed prior to installation per Section 09900.

- C. Workmanship: Exposed surfaces of finish carpentry shall be free from tool marks, torn grain, cross sanding, or any workmanship defects that cannot be concealed by specified painter's finish.

END OF SECTION

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SECTION 06 40 00 – ARCHITECTURAL CASEWORK

PART 1 - GENERAL

1.01 SCOPE

- A. Furnish and install all architectural woodwork, architectural casework, laminated plastic counters, hardware, and accessories as indicated on the Drawings and specified here.

1.02 RELATED WORK

- A. Backing and Blocking: 06 10 00.
- B. Finish Carpentry: Section 06 20 00.
- C. Sheet Metal: Section 07 60 00.
- D. Finish Hardware, except as specified here: Section 08 71 00.
- E. Resilient Flooring and Base: Section 09 65 00
- F. Paint (Opaque Finishes): Section 09 90 00.
- G. Outlets and fittings built into architectural casework: Refer to Electrical Drawings.

1.03 QUALITY ASSURANCE

- A. Comply with "Manual of Millwork" of the Woodwork Institute, (Latest) Edition, for the grades, types and styles specified.
- B. Qualifications of fabricators and installers:
 - 1. For actual fabrication and installation of architectural woodwork, use only personnel who are thoroughly trained and experienced in the products involved and in the recommended methods for their fabrication and installation.
 - 2. In the acceptance or rejection of architectural woodwork, no allowance will be made for lack of skill on the part of the workmen.

1.04 SUBMITTALS

- A. Comply with the provisions of Section 01 30 00 for submitting:
 - 1. Complete materials list of all items proposed to be furnished and installed under this Section. Submittal required.
 - 2. Product data, including full range of color samples. Submittal required.
 - 3. Shop Drawings showing each item provided under this Section, completely detailing joinery and other construction, including anchorage, and displaying the "Certificate of Compliance" of the Woodwork Institute for the grades specified. Submittal required.
 - 4. Sufficient other data to demonstrate compliance with the specified requirements. Submit upon Architect's request only.
- B. The approved manufacturer's recommended installation procedures will become the basis for inspecting and accepting or rejecting actual installation procedures used on the Work.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver casework to job until notified by the General Contractor that buildings are enclosed and suitable storage space is available.
- B. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends intact. Store on site secure from weather, soil and physical damage.

1.06 PROJECT CONDITIONS

- A. Products shall be available at project when required for installation so as not to delay job progress. Installer for these products shall cooperate with installers performing work under other sections involved to effect proper installation.
- B. Casework fabricator shall coordinate installation of any Owner supplied equipment when indicated on the Drawings.

PART 2 - PRODUCTS

2.01 HIGH PRESSURE LAMINATE COVERED CASEWORK

- A. High Pressure Plastic Laminate Covered Casework shall be constructed in accordance with W.I.A. Section 15 and Supplemental No. 2 for the following requirements:
1. Construction Type II; Single length units to fit access openings.
 2. Construction: Style A; Frameless.
 3. Door and Drawer Construction: WI Type A, Flush Overlay.
 4. Grade: Custom.
 5. Exposed surfaces shall be covered in .028-inch (.71mm) thick high pressure laminated plastic in accordance with NEMA LD 3-1985, Type GP50, ,Nevamar, Formica, or approved equal. Matt finish.
 6. Semi-exposed surfaces low pressure melamine in accordance with ALA-85.
 7. Concealed surfaces shall be in accordance with grade standard unless otherwise indicated.
 8. Edge Banding: All drawer and door edge banding shall be .028-inch (.71mm) thick high pressure laminated plastic to match color and texture of exposed surfaces.
 9. Semi-exposed edges shall be banded with plastic "T" molding. Color as selected by Architect.
 10. Colors shall be as selected by Architect from manufacturers full range of colors or as scheduled on the Drawings.
 11. Drawer Bottoms shall be color sealed tempered hardboard.
 12. Semi-exposed cabinet backs shall be color sealed tempered hardboard.
 13. Countertop Type as indicated on the Drawings.

2.02 MISCELLANEOUS CASEWORK AND ARCHITECTURAL WOODWORK ITEMS

All miscellaneous casework and architectural woodwork items not specifically identified as to "Type" shall be constructed as indicated on the Drawings and shall meet WIC Custom Grade, Type I, Style A construction standards as specified in this Section.

2.03 COUNTERTOPS

- A. General purpose grade plastic laminated covered countertops shall be constructed to requirements of WI Premium Grade.
 - 1. Edges to be self-edged with same material as used on counter surface.
 - 2. Splashes to be 4 inch (10cm) integral square butt joint splash with matching end splash unless otherwise indicated.
 - 3. Laminated plastic to be 0.050-inch (1.3mm) thick for horizontal surfaces in accordance with NEMA LD 3-80, Type GP50 and FR50 at rated locations. Nevamar, Formica Corp., or approved equal. Matt Finish.
 - 4. Core Material: Close-grained hardwood plywood with "Sound" (2) Grade Face Veneer and Crossband Veneer under the face veneer of Industrial (3) Grade or better, in accordance with W.I.C. standards, but in no case less than 3/4-inch (1.9cm) thick or with deflection greater than 3/16-inch (4.8mm) with 150 pound (68kg) load at midspan.
 - 5. Color shall be as selected by Architect from manufacturer's full range of colors as scheduled.
 - 6. Nosings shall be squared self-edged, custom.

2.05 ACCESSORY AND MISCELLANEOUS MATERIALS

- A. Provide all accessories and materials as required for finish architectural casework.
- B. Fasteners: Provide screws and adhesives in accordance with specified standards and as required. Staples and nails shall not be used for casework joinery.
- C. Bases and sleepers shall be in accordance with the referenced Standards and as indicated on the Drawings.

2.06 HARDWARE

- A. Hardware shall be furnished and installed as required to provide a complete casework installation.
- B. Hardware shall be US-26D finish unless specified otherwise.

- C. The following hardware is listed to establish a quality of product. Choice of manufacturer and type or use of substitutions of equal quality products may be made at the option of the cabinet manufacturer, but shall be subject to the approval of the Architect whose decision will be final.
1. Hinges: Unless otherwise indicated, casework door hinges shall be as follows:
 - a. 3/4" (1.9cm) Doors: 1 pr. Stanley 1592, Lawrence 1234-3/4", or approved equal.
 - b. Doors 1-1/8" (2.6cm) or thicker: 1-1/2 pr. Stanley 1589, Lawrence SC 1224-2-1/2", Hager 1825, or approved equal.
 - (1.) Secure into 1 inch (2.5cm) thick/wide, solid stock sub-frame or backing.
 - c. Equivalent hinges of Amerock, Hager, Jaybee, McKinney or Washington are acceptable.
 - d. Use of concealed hinges as an equal shall be subject to the approval of the Architect.
 2. Door and Drawer Pulls: Stanley 4484, Quality #812, or approved equal 4" (10cm) wire pull with 1" (2.5cm) clear finger space.
 3. Magnetic Catches: Epcos 591, Jaybee 3776, or approved equal.
 - a. Floating or self-aligning type, aluminum or plastic case, type as required by conditions, one per leaf for doors up to 48" (122cm) high and two per leaf for doors 48" (122cm) high and over.
 4. Elbow Catches: Not used.
 6. Drawer Slides: Grant #335, KV 1429, HDI 2900, or approved equal; ball bearing, nylon wheel, full extension, 100 pound (45kg) capacity rating.
 7. Adjustable Shelf Standards: KV 255, Grant 120, Stanley 1805 or approved equal.

8. Adjustable Shelf Clips: KV 244, equivalent by Grant, Stanley CD1800, or approved equal with retention pins.
9. Cord Sleeve/Grommet: Plastic cord sleeve equal to product as manufactured by D. Mocket & Co., Inc. (213) 318-2441. Size and locations as indicated on the Drawings and or as directed by the Architect. Minimum at 4'-0" o.c. Color as selected by the Architect.
10. Provide additional hardware items as required for the complete and proper installation and operation of Architectural Casework and Woodwork items as indicated on the Drawings and as recommended by WI Supplemental No. 1 for Finish Hardware.

2.07 FABRICATION

- A. Casework shall be flush overlay construction, unless otherwise indicated.
- B. Interior face of hinged doors shall be covered with same material as exposed surfaces.
- C. Maximum Casework Door Sizes: Doors shall not exceed following dimensions in either height or width for thickness given:

<u>Door Thickness</u>	<u>Door Height (Maximum)</u>	<u>Door Width (Maximum)</u>
3/4" (1.9cm)	48" (122cm)	26" (66cm)
1-1/8" (2.6cm)	66" (168cm)	36" (91cm)

Doors over 66 (168cm) inches high or 36 (91cm) inches wide shall be 1-3/8 (2.7cm) inches thick hollow (reinforced for hardware) core doors of same WIC grade specified for exposed portions of cabinet.

1. Adjust casework depth to align face of doors with adjacent casework with doors of different thicknesses.
- D. Drawers: All drawers shall operate on full extension metal slides, as specified, of 100 pounds (45kg) capacity unless otherwise noted.
 - E. Shelves: Make all shelves adjustable, unless otherwise indicated. Install adjustable shelves on metal hardware recessed flush. Shelves shall have same specified exposed or semi-exposed material on both faces. "T" mold plastic at front edge

where shelves are behind cabinet doors. Scheduled exposed materials at all edges at open shelving units unless otherwise indicated.

1. Thickness for adjustable shelves shall be in accordance with the referenced Standards for the unsupported spans for the specified grades, unless otherwise noted.
- F. Shop fabricate items and deliver to job in largest unit sections as possible and in accordance with WI Construction Types specified. Where field joining is required, accurately fit and align in shop and make all provisions for rigid and permanent joining in field. Allow sufficient material to permit accurate scribing to adjacent walls and related work in accordance with the referenced Standards and as shown on the Drawings.
- G. Make cutouts required for equipment and accessories mounted in or on casework items.
- H. Contractors Option: In lieu of Adjustable Shelf Standards and Adjustable Shelf Clips the Contractor may provide drilled shelf support holes spaced at one inch center to center with plastic shelf supports with seismic retainer pins or clips to suit. Retainer design, appearance and performance is subject to the approval of the Architect, who's decision shall be final.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to all work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this work may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify the Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PREPARATION

- A. Take all necessary measurements in the field to ensure proper dimensions for cabinets and countertops.
- B. Coordinate work under this Section with other trades whose work adjoins, combines, or aligns with same.

3.03 INSTALLATION

- A. Ensure that in-wall backing is properly located before wall finish is installed. Set casework in place, square, level, straight and plumb. Scribe and accurately fit to adjacent work. Secure to structure in position indicated with required fastenings, clip angles, bases, anchors, nailing, blocking, shimming and other fittings.
- B. Provide closures and fillers, and scribe strips required to provide a neat and finished installation. All such exposed items shall match casework.
- C. Furnish miscellaneous metal support and bracing required for installation. Deliver these items to trades responsible for adjacent work and designate exact location for their installation.
 - 1. Minimum horizontal anchorage along top and bottom edges of wall mounted and floor mounted casework shall be #12 x length to suit (minimum 2-1/2" (6.4cm)) sheet metal screws (plated) with finish washers at 12" (30cm) o.c. and 3" (10cm) from each end into solid backing or metal backing plate. Minimum three (3) fasteners each along top and bottom edges.
- D. Adjust doors, drawers, and other moving parts to operate freely without binding or sticking. Adjacent items shall be level, vertical lines plumb and aligned with clearances uniform.
- E. Drill shelves as required to receive retention pins.

3.04 FIELD QUALITY CONTROL

Compliance: The Owner reserves the right to request an inspection by a representative of the Woodwork Institute at any time during the work of this Section to verify that all work of this Section has been performed in accordance with the referenced standards at any time during the work of this Section.

3.05 ADJUSTING AND CLEANING

- A. Prior to final inspection and acceptance by the Architect, completely check each installed item and adjust for proper operation.
- B. Remove all fingerprints, smudges, and the like from casework; vacuum clean drawers and interiors of dust, dirt and sawdust.

3.06 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

-END OF SECTION-

SECTION 07 21 00 – THERMAL AND ACCOUSTICAL INSULATION

PART 1 - GENERAL

1.01 SCOPE

- A. Building insulation required for this work includes, but is not necessarily limited to:
 - 1. Sound Insulation.
 - 2. Thermal Insulation.
 - 3. Drain Pipe Insulation Wrap.

1.02 RELATED WORK

- A. Section 07 25 50: Fire Safety Insulation.
- B. Duct and pipe insulation as noted on the Drawings.

1.02 QUALITY ASSURANCE

Insulation shall meet minimum requirements set forth in California Code of Regulations, Title 24, Section 2-5311 "Installation of Certified Insulating Material" and CBC Section 707.

1.03 SUBMITTALS

- A. Refer to Section **01 30 00**.
- B. Manufacturer's data: Submit data indicating types of materials proposed for use, and their locations.
- C. Certification: Provide manufacturer's certification or identification on insulation that materials meet specified requirements.

1.04 PRODUCT DELIVER, STORAGE AND HANDLING

Deliver insulation to site in original, unbroken and unopened containers. Store material off ground in dry, protected areas.

PART 2 - PRODUCTS

2.01 PRODUCT STANDARDS

- A. Thermal resistance value (R): Thermal resistance calculated on value of material itself, without regard to location or method of installation.
 - 1. Match existing in areas of adjacent work.

2.02 MATERIALS

- A. Thermal insulation: FS HH-I-521, mineral fiber batts or blankets, made from rock, slag or glass processed from molten state into fibrous form, membrane covered, in self supporting batt or blanket form, with integral vapor barrier on under or inside face and vapor permeance of not more than 1 perm when tested in accordance with ASTM E96.
 - 1. Insulation to conform with CBC Section 707.3: All insulation materials including facings, such as vapor barriers or breather papers installed within roof-ceiling assemblies, walls, shall have a flame-spread rating not to exceed 25 and a smoke density not to exceed 450 when tested in accordance with U.B.C. Standard No. 8 -1.
 - 2. Foil faced materials at exposed or rated applications.
 - 3. Provide at all new infilled exterior wall openings.
- B. Acoustical insulation: FS HH-1-521E Type 1, mineral fiber batts or blankets, full thickness in stud walls typical at all new interior walls, unless noted otherwise. USG "Sound Attenuation Blankets" or approved equal.

2.04 DRAIN PIPE INSULATION WRAP

- A. Drain pipe insulation wrap: Exposed drain and hot water supply plumbing lines under sinks and vanities shall be wrapped with an approved insulation wrap, shaped and formed to a neat and uniform appearance with tapered ends. Insulation shall be wrapped with a white washable vinyl tape as approved by the Architect.
 - 1. Insulation wrap systems equal to TrueBro Handi Lav-Guard, Plumberex Handy-Shield, or approved equal pipe wraps systems are also acceptable.

2.05 MISCELLANEOUS MATERIALS

- A. All other materials, such as additional insulation materials, fasteners, line wire, tape and retainers, not specifically described but required for a complete and proper installation of building insulation, shall be as selected by the Contractor subject to submittal approvals.

1. Additional insulation materials shall be selected from manufacturer's standard materials and shall conform to the specified Codes, Standards and performance requirements as indicated on the Drawings or as required for the complete and proper construction of the building envelope.

PART 3 - EXECUTION

3.01 LOCATIONS

- A. Provide mineral fiber batts at exterior stud walls and ceiling spaces where existing insulation envelope is affected by new work to create a complete thermal around habitated space.
- B. Provide acoustical insulation at all interior walls unless otherwise noted.

3.02 INSTALLATION OF THERMAL INSULATION

- A. Metal Studs: Install friction fit thermal insulation batts or blankets with snug fit at sides and firmly butted ends with no open space at perimeter or in between. Lap and adhere flanges of vapor barrier in such manner that air leaks between insulation and joints are minimized.
- B. Metal Ceiling Joists: Install friction fit thermal insulation in same manner specified for Metal studs.
- C. Batt, Blanket Insulation: Provide insulation barrier system with no voids in system. Keep end joints to a minimum. Install with vapor barrier to warm side. Fit ends and edges tight to framing members. Keep all piping and other work on warm side of insulation. Provide tape vapor barrier joints. Tape as required.

3.03 INSTALLATION OF ACOUSTICAL INSULATION

- A. Metal studs or joists: Install with friction fit between studs or joists in accord with manufacturer's recommendations, filling all voids.
- B. Existing Wood studs or joists: Install with friction fit between studs or joists in accord with manufacturer's recommendations, filling all voids.

END OF SECTION

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SECTION 07 25 50 – FIRE SAFING MATERIALS

PART 1 - GENERAL

1.01 SCOPE

- A. Provide fire safing and firestopping systems and smoke seals as indicated on the Drawings as well as the following areas, including:
 - 1. All openings in fire-rated ceilings and walls both empty and those accommodating penetrating items such as cables, conduits, pipes, ducts, etc.

1.02 RELATED WORK .

- A. Electrical: As noted on the Drawings.

1.03 QUALITY ASSURANCE

- A. The approved manufacturer's recommended installation procedures will become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.
- B. Catalog Standards:
 - 1. Manufacturer's catalog numbers may be shown on Drawings or convenience in identifying specific items. Unless modified by notation on Drawings or specified, catalog description for indicated number constitutes requirements for the item specified.
 - 2. The use of catalog numbers and specific requirements set forth in Drawing and Specifications does not preclude use of any other manufacturer's products or procedures, which may be equivalent. Such numbers and requirements establish standards of design and quality for materials, construction, and workmanship.
- C. Fire safing and firestopping materials shall conform to both Flame (F) and Temperature (T) ratings as tested by nationally accepted test agencies per ASTM E-814 or UL 1479 and E-119 fire tests. The F rating and T rating must be a minimum of one (1) hour, but not less than the fire resistance rating of the assembly being penetrated. The fire resistance rating of the assembly being penetrated. The fire test shall be conducted with a minimum positive pressure differential of 0.03 inches of water column.
- D. Fire safing and fire stopping systems shall be performed by a Contractor trained or

approved by system manufacturer. Equipment used shall be in accordance with system manufacturer's written installation instructions.

1.04 SUBMITTALS

- A. Refer to section 01 30 00 for submitting the following:
 - 1. Submit manufacturer's printed product data indicating product characteristics, performance and limiting criteria. Submittal required.
 - 2. Submit manufacturer's installation instructions for each type of firestop required by the project. Submittal required.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends and UL label intact. Store on site secure from weather, soil and physical damage.
- B. Store in strict accordance with the manufacturer's recommendations.

1.06 PROJECT CONDITIONS

- A. Products shall be available at project when required for installation so as not to delay job progress. Installer for these products shall cooperate with installers performing work under other sections involved to effect proper installation.
- B. Conform to manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.

PART 2 - PRODUCTS

2.01 FIRE SAFING SYSTEM

- A. Fire safing systems shall be "Thermafiber life-safety insulation systems: as manufactured by United States Gypsum, FBX System as manufactured by Fibres, or approved equal.
- B. Thickness, assemblies and widths as required to achieve ratings as indicated.
- C. Systems shall be in accordance with ratings requirements for ASTM E-119 and E-814.

- D. Provide fasteners, retainers, clips, brackets, adhesives, sealants, or other system accessories as required by manufacturer for complete and proper installation.

2.02 FIRESTOPPING SYSTEMS

A. Acceptable manufacturers:

1. Bio Fireshield, Inc.
2. Dow Corning Corp.
3. Electrical Products Division, 3M Center.
4. Hilti Construction Chemicals, Inc.

B. Materials:

1. Materials shall be free of asbestos.
2. Materials shall provide a Flame (F) and Temperature (t) rating of at least one (1) hour, but not less than the fire resistance rating of assembly being penetrated, as tested per ASTM E-814.
3. Materials shall conform to all applicable governing codes.
4. Firestop Mortar: Single component Portland Cement fly ash mortar. Required no supports or anchoring devices to pass water hose stream tests. UL classified for both Flame (F) and Temperature (T) ratings. Firestop mortar shall restrict the transmission of temperature as well as the passage of flame, smoke and water.
5. Firestop Sealant: Single or multiple component silicone sealant. Provides a flexible, air-tight, water proof seal that bonds to most building materials. UL classified for both flame (F) and Temperature (T) ratings. Firestop sealant shall restrict the transmission of temperature as well as the passage of flame, smoke and water.
6. Firestop Sleeve: Prefabricated device used around plastic pipes in fire-rated floors and walls. The sleeve is made up of a steel collar lined with an intumescent material. UL classified for both Flame (F) and Temperature (T).
7. Intumescent Mastic Sealant: Single component, water-based intumescent. Classified for both Flame (F) and Temperature (T) ratings under ASTM E-

814-83.

2.03 MISCELLANEOUS ITEMS

Provide all miscellaneous fasteners, clips, retainers, brackets, supports, connectors and accessory items as indicated on the Drawings or as required by the product manufacturer for a complete and proper installation of the materials, products or systems specified in this section.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to installation of the work of this section, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PREPARATION

- A. Clean surfaces and substrates of dirt, oil, loose materials and other foreign materials which may affect the proper bond or installation of the firestops in strict accordance with manufacturers written instructions.
- B. Provide primers as required which conform to manufacturers recommendations for various substrates and conditions.
- C. Do not apply fire safing and fire stops to surfaces previously painted or treated with a sealer, curing compound, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required in compliance with manufacturers instructions.
- D. Mask where necessary to protect adjoining surfaces. Remove excess material and stains on surfaces as required.

3.03 INSTALLATION

- A. Install in strict accordance with manufacturers printed instructions to provide a Flame (F) and Temperature (T) rating of at least one hour, but not less than the fire resistance rating of the assembly being penetrated.

- B. Ensure that anchoring devices back-up materials, clips, sleeves, supports and other materials used in the actual fire tests are installed.
- C. Install fire safings and firestops with sufficient pressure to properly fill and seal openings to ensure and effective smoke seal.
- D. Tool or trowel exposed surfaces. Remove excess firestop or fire safing material promptly as work progresses and upon completion.

3.04 FIELD QUALITY CONTROL

- A. Contractor shall immediately notify the Architect if the firestopping systems herein specified cannot meet the requirements of the specification.
- B. Contractor shall examine firestops to ensure proper installation and full compliance Code authorities.
- D. Correct unacceptable fire safing assemblies and firestops and provide addition inspection to verify compliance with this specification at no additional cost.
- E. When finished, work will be visible. Clean adjacent surfaces in accordance with manufacturer's printed instructions.
- F. If visible in the finished work, remove temporary dams after initial cure of firestops.
- G. Correct staining and discoloring on adjacent surfaces.
- H. Remove all debris and excess materials entirely from site and leave work in a neat and tidy condition.

3.05 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

-END OF SECTION-

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SECTION 07 60 00 – SHEET METAL WORK

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Except as specifically not included, provide all formed and flat sheet metal and flashing eleven (11) gauge and lighter as indicated on the drawings.

1.02 RELATED WORK

- A. Section 05 50 00: Formed metal, 10 gauge or heavier
- B. Section 07 92 00: Sealants
- C. Section 09 90 00: Painting
- D. Sheet metal for plumbing, heating and air-conditioning. Refer to Drawings.
- E. Flashing for piping, vents, electrical conduit and heating and air-conditioning ductwork through walls or the roof. Refer to the Drawings.

1.03 QUALITY ASSURANCE

- A. Qualifications of manufacturer: Products used in the work of this Section shall be produced by manufacturer's regularly engaged in manufacture of similar items and with a history of successful production acceptable to the Architect.
- B. Qualifications of Installers: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 STANDARDS

Except as herein modified, fabricate and install Work in accordance with printed standards of Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Architectural Sheet Metal Manual and Specifications, latest Edition.

1.05 SUBMITTALS

- A. Refer to Section 01 30 00 for submitting the following items:
 - 1. Shop Drawings: Indicate type, gauge, and shape of sheet metal items; type,

size, location and spacing of all joints, including expansion joints, and fasteners; shop finishes and other required coatings. Submittal required.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Time deliveries with construction progress. Cooperate with various trades to which sheet metal items are furnished and with those whose progress of Work is dependent upon installation of sheet metal items.
- B. Unless otherwise indicated, deliver items to site unpainted.
- C. Store galvanized metal under dry conditions and protect from moisture until installation commences.
- D. Store metal materials in accordance with the manufacturer's recommendations and the referenced Standards.

1.07 WARRANTY

Refer to Section **01 78 00**. Warranty sheet metal work for a period of 2 years to be free of water leaks. Warranty shall include replacement and/or repair of other work damaged by water due to leakage in sheet metal work

PART 2 - PRODUCTS

2.01 SHEET METAL

- A. Zinc-Coated (Galvanized) Sheet Metal: Fed. Spec. QQ-S-775, Type I, Class D or ASTM A 525, copper bearing. Unless otherwise noted, gauges indicated or specified are Galvanized Sheet Gauge. Zinc coating shall be in accordance with ASTM A 525, and shall be not less than Coating Class G90.
- B. Aluminum: Fed. Spec. QQ-A-250D, alloy 3003-H14 or ASTM B209. Alclad 3003, Alclad 3004 or Alclad 3005 shall be clad on (one side) (two sides). Aluminum alloy, extruded shapes: ASTM B221. Clear anodized finish: AA-C22A41. Color anodized finish: AA-C22A42.
- C. Stainless Steel Sheet: Fed. Spec. QQ-S-766 annealed or fully annealed or ASTM 167, Types 301, 302, 304 or 316. No. [4] finish at exposed surfaces, unless otherwise indicated.
- D. Copper: Fed. Spec. QQ-C576 or ASTM B370, light cold rolled temper.
- E. Copper, Lead Coated: ASTM B101, Type I or II, Class A.

- F. Lead: Fed. Spec. QQ-L-201, grade B. 4 lb/sf min.

2.02 ACCESSORIES

- A. Nails and Fasteners:

- 1. General: Type best suited for intended purpose.

- a. Use stainless steel or hot-dip galvanized steel fasteners with zinc-coated steel.

- 2. Fasteners for Securing Sheet metal to Concrete and Masonry: Fastway Extruded Vinyl Anchors, Holub "Hi-Red" Plastic Screw Anchors, "Star" Plastic Anchors, or approved equal non-ferrous anchors, used with wood or sheet metal screws of specified type material; lead anchors are not acceptable.

- B. Solder: Federal Specification QQ-S-571 or ASTM B32, Class A1. Use 50/50 for all applicable work unless otherwise specified.

- 1. Recommended composition Sn50 for galvanized metal materials.

- C. Soldering Flux: Fed. Spec. O-F-506, Type and composition best suited for material being soldered.

- D. Primers:

- 1. Asphalt Primer: ASTM D 41, brushable.

- 2. Type as recommended by membrane roofing manufacturer where sheet metal work is in contact with membrane roofing materials.

- E. Butyl Sealing Tape: Morrison & Company's CL-50 Cushion Lock Extruded Polyisobutylene Sealer Tape (3/32" x 1"), or approved equal. Refer to Section 07 90 00.

- F. Sealant: Approved type of silicone, polysulfide, butyl or urethane. Refer to Section 07 90 00 - Sealants.

PART 3 - EXECUTION

3.01 INSPECTION

SHEET METAL WORK

SEPTEMBER 2019

- A. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 FABRICATION AND INSTALLATION

- A. Where work is not otherwise shown or specified, conform to details and requirements set forth in the referenced SMACNA.
- B. Where materials or construction systems are specified with reference to a particular manufacturer (such as caulking and sealants), make installations in strict accord with the approved manufacturer's installation instructions.
- C. Except where otherwise noted or specified, sheet metal work shall be galvanized sheet steel. Make cleats and edge strips of the same metal as items with which they are used.
- D. Accurately reproduce profiles and bends; make intersections sharp, even and true. Make plain surfaces free from buckles and waves with as few joints as possible. Reinforce work as required for strength and appearance.
- E. Bend metals to minimum radius as recommended by manufacturer for thickness used (in general, the radius shall be not less than the thickness of metal) and in accordance with the referenced SMACNA standards.
- F. Provide for proper expansion and contraction caused by thermal or building movement. Make joints tight. Conceal nails and other fastenings where possible. Face nailing through exposed surfaces is not permitted unless specifically shown. Secure exposed edges to underlying materials with clips, cleats or tabs (edge strips). Provide neoprene washers at exposed fasteners.
- G. Make seams in direction of flow.
- H. Hem exposed edges of sheet metal work 1/2 inch.
- I. Do cutting, fitting, punching, etc., in sheet metal to accommodate work specified elsewhere and provide necessary accessory items.
- J. Properly apply caulking and sealants to sheet metal items to permit movement between surfaces and to make entire installation watertight. Conform to

requirements of Caulking and Sealants Section.

- K. Soldering: Roughen smooth surfaces with clean emery cloth or sandpaper; do not use steel wool. Use torch or well heated irons. Solder slowly, thoroughly heating seams and completely sweating solder through full width with at least 1" of solder evenly flowed along seams. Wherever possible, solder in a flat position. Solder seams on slopes greater than 45 degrees a second time. Solder immediately after application of flux; after soldering, immediately neutralize any corrosive flux with 5% soda solution and flush with clean water. Soldering of exposed surfaces shall be neatly done. Exposed solder shall be dressed and finished. Soldering shall be employed only to seal or fill seams. Where structural strength is required, do not rely on solder alone but use supplementary mechanical fasteners.
- L. Cut edges or joints and abrasions which expose base metal of galvanized sheet metal shall be coated with solder to equivalent thickness of zinc coating before assembling or installing sheet metal items.
- M. Priming Surfaces:
 - 1. Coat all aluminum surfaces in contact with wood with asphalt primer, and allow to dry before setting in place.
- N. Provide isolation of dissimilar metals from contact with each other by coating with asphalt primer.
- O. Finish all sheet metal work straight and true, with miters and joints accurately fitted. Exposed work shall be free of dents. All corners shall be reinforced, and seams soldered or otherwise made waterproof. Exposed edges shall be hammered or finished smooth.
- P. Seams: Comply with SMACNA "Architectural Sheet Metal Manual".

3.04 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of all other trades.
- B. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.

-END OF SECTION-

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SECTION 07 92 00 – SEALANTS AND CAULKINGS

PART 1 - GENERAL

1.01 SCOPE

Provide all caulking and sealants for all interior and exterior joints as indicated on the Drawings and specified here or as otherwise required for and as required to accommodate new work or make a weather-tight building envelope.

1.02 RELATED WORK

- A. Section 07 60 00: Sheet Metal Work
- B. Section 09 25 00: Gypsum Wallboard

1.03 QUALITY ASSURANCE

- A. Except as otherwise indicated, joint sealers are required to establish and maintain airtight and waterproof continuous seals on a permanent basis, within recognized limitations of wear and aging, as indicated for each application.
- B. Failure of installed sealers to comply with this requirement will be recognized as failures of materials and workmanship.
- C. Manufacturer's Representative: Arrange for technical representative to be on project site to advise installer of proper procedures and precautions for use of materials, and to check installation.

1.04 SUBMITTALS

- A. Refer to Section 01 30 00 for submitting the following items:
 - 1. Samples: Submit color charts for selection by Architect. Submittal required.
 - 2. Product data and installation instructions for sealant, backing, and related materials. Submittal required.
- B. Certification: Manufacturer's published data, letter of certification, or certified test laboratory report that materials are chemically compatible with each other and with substrate, comply with Specification requirements, and are intended for applications indicated. Submittal required.

SEALANTS AND CAULKINGS

SEPTEMBER 2019

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver caulking and sealing compounds to the job in unbroken, sealed containers bearing the manufacturer's mixing directions. Store materials in sealed containers in a dry protected area above the ground or floor.
- B. Protect caulking materials before, during and after installation, and installed work of other trades during installation.
- C. Do not use caulking materials that have been stored for a period exceeding the maximum recommended shelf life.

1.06 JOB CONDITIONS

- A. Do not proceed with installation of sealant if joint width is less than designed, unless written notification is submitted to Contractor and a written order to proceed is provided by the Contractor.
- B. Do not proceed with the installation of sealants under conditions when joint to be sealed is damp, wet or frozen, or when temperatures are below or above the manufacturer's recommended limitations for installation. Consult the manufacturer for specific instructions before proceeding.

1.07 WARRANTY

- A. Installer warrants workmanship for a period of two (2) years in accordance with the terms of the Contractor's written warranty. Materials are warranted in accordance with the manufacturer's written warranty.
- B. Submit in accordance with Section 01 78 00.

PART 2 - PRODUCTS

2.01 PRODUCT DESCRIPTION

- A. General: All sealants, caulking compounds, primers, etc. shall be non-staining to adjacent exposed materials. Areas having similar application shall be of the same manufacturer's standard matching colors.
- B. Sealants and caulking compounds used on this project shall be compatible with the substrate and with other sealing materials where intersections occur.

2.02 MATERIALS

SEALANTS AND CAULKINGS

SEPTEMBER 2019

- A. Polysulfide (Type 1):
 - 1. Two-part conforming to Fed Spec TT-S-00227E, Class A, Type 1 (self leveling) or Type 2 (non sag) as recommended by manufacturer for application.
 - 2. Acceptable products:
 - a. Synthacalk GC-5, from Pecora Corp.
 - b. Sonolastic, from Sonneborn-Contech, Inc.
 - c. RC-350, from PRC.

- B. Modified Polyurethane (Type 2):
 - 1. Two or three-part conforming to Fed Spec TT-S-000227E, Class A, Type II.
 - 2. Acceptable products:
 - a. Dymeric, from Tremco.
 - b. Dynatrol II, from Pecora.
 - c. NP2, from Sonneborn-Contech, Inc.
 - d. RC-2, RC-270, from PRC.

- C. Polyurethane (Type 3):
 - 1. Two-part conforming to Fed Spec TT-S-000227E, Class A, Type 1 or II.
 - 2. Acceptable Products:
 - a. NR-200, from Pecora.
 - b. RC-270, from PRC.
 - c. Sonolastic Paving Joint Sealant, from Sonneborn-Contech.
 - d. THC-900/901, from Tremco.

- D. Acrylic, Solvent Cure (Type 4):

SEALANTS AND CAULKINGS

SEPTEMBER 2019

1. One part, Fed Spec TT-S-00230.
 2. Acceptable products:
 - a. Mono, from Tremco.
 - b. Unicrylic, from Pecora.
 - c. Permacryl, from Schnee-Morehead Chemicals, Inc.
- E. Nondrying, Nonskinning (Type 5):
1. One-part sealing compound.
 2. Acceptable products:
 - a. Curtain Wall Sealant, from Tremco.
 - b. BR-06, from Pecora.
 - c. GC-55 Noncuring, from Goal Chemical.
- F. Foam Sealant (Type 6):
1. Two-part foamed silicone elastomer.
 2. Acceptable Product:
 - a. 3-6548 Silicone RTV Foam, from Dow-Corning.
 - b. PR-850, from PRC.
- G. Acoustical Sealant (Type 7):
1. One-part non-sag, acrylic latex polymer.
 2. Acceptable products:
 - a. AC-20, from Pecora.
 - b. 834 from Tremco.
 - c. USG.

2.03 ACCESSORIES

- A. Sealant Primer: Suitable to substrate surfaces as recommended by the sealant manufacturer. Knowledge of whether the primer is staining or non-staining should be obtained prior to application.
- B. Joint Backing: Preformed compressible, resilient, non-waxing, non-extruding, non-staining strips (polyethylene foam, urethane foam, or butyl) as recommended by the sealant manufacturer. Backing shall be of sizes and shapes to suit the various conditions and should be compatible with sealant, primers, and substrates.
- C. Bond Breaker: As recommended by the sealant manufacturer.
- D. Cleaning Agent: As recommended by the sealant manufacturer.
- E. Masking Tape: Pressure sensitive adhesive paper tape.
- F. Sealant Tape:
 - 1. Compressible adhesive-cohesive tape of cross-linked butyl polyisobutylene rubber that accommodates variations and movement, sized as necessary to allow for joint movement of $\pm 25\%$.
 - 2. Acceptable Product: PTI 606, from Protective Treatments, Inc.
- G. Colors: As selected by Architect from manufacturer's standard color chart.
- H. Expansion Joint Filler:
 - 1. Closed cell polyethylene compatible with sealant.
 - 2. Acceptable product:
 - a. Sonoflex, from Sonneborn-Contech.
 - b. Poly-Tite, from Sandell Mfg.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine joints to be sealed for construction defects which would adversely affect execution of work. Report all known detrimental conditions immediately in writing to the Contractor, for correction by the Contractor.

3.02 PREPARATION

- A. **Cleaning:** Clean joint surfaces using joint cleaner as necessary to be free of dust, dirt, oil, grease, rust, lacquers, laitance, release agents, liquid water repellent, moisture, or other matter which might adversely affect sealant adhesion.
- B. **Primer:** Apply primer, if recommended by sealant manufacturer, to dry surfaces prior to joint backing, bond breaker, or sealants.
- C. **Joint Backing:** In joints where the depth of the joint exceeds the required depth of the sealant, install joint backing to provide backing and uniform depth of sealant. Joint backing shall be installed with approximately 30% of compression. Do not stretch, twist, puncture or tear joint backing. Butt joint backing at intersections.
- D. **Bond Breaker Tape:** Install bond breaker tape smoothly at back of joint where joint backing is not required or cannot be installed. (Sealant shall adhere only to the sides and not to the back of the joint so as to eliminate three-sided adhesion.)

3.03 INSTALLATION

- A. **Sealant Application:** Apply sealant in accordance with manufacturer's application manual and instructions, using hand guns or pressure equipment with proper nozzle size, on clean, dry, properly prepared substrates. Force sealant into joint against sides of joint to make uniform. Avoid pulling of the sealant from the sides. Fill sealant space completely with sealant.
- B. **Tooling:** Tooling is required to ensure firm full contact with the interfaces of the joint. Tool joints to form smooth, uniform beads with slightly concave surfaces. Finished joints shall be straight, uniform, smooth, and neatly finished. Remove any excess sealant from adjacent surfaces of joint, leaving the work in a neat, clean condition.
- C. Where an irregular surface or insensitive joint border exists, the applicator shall apply masking tape at the edge of the joint to insure joint neatness and protection. Remove tape after sealant is applied.

3.04 CLEANING

- A. Remove excess materials adjacent to joints by mechanical means or with oxylol, xylene, or mineral spirits as work progresses to eliminate evidence of spillage or damage to adjacent surfaces.

3.05 PROTECTION

- A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Advise contractor of procedures required for cure and protection of joint sealers during construction period, to prevent deterioration or damage (other than normal wear and weathering) at time of Substantial Completion. Cure and protect sealants in a manner which will minimize increases in modulus of elasticity and other accelerated aging effects. Replace or restore sealants which are damaged or deteriorate during construction period.

3.06 SEALANT SCHEDULE

- A. Interior and exterior joints subject to movement: Type 1 or 2 at Contractor's option and as recommended by manufacturer for joint condition.
- B. Interior and exterior horizontal joints subject to foot and vehicular traffic: Type 3, self-leveling.
- C. Interior horizontal and vertical joint not subject to movement (not including traffic): Type 4.
- D. In contact with roofing or waterproofing materials: Type 3 or Type 4, low modulus, unmodified.
- E. Unexposed wall joints: Type 5.
- F. Fire stops and penetration seals: Type 6.
- G. Acoustical Wall Edges: Type 7

END OF SECTION

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SECTION 08 10 00 – METAL DOORS AND FRAMES - SECTION

PART 1 - GENERAL

1.01 RELATED WORK

- A. Section 06 20 00: Finish Carpentry.
- B. Section 08 21 00: Wood Doors.
- C. Section 08 71 00: Finish hardware.
- D. Section 09 90 00: Painting.

1.02 SUBMITTALS

- A. Refer to Section 01 30 00.
- B. Shop drawings: Submit drawings showing completed details of door and frame construction.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Store doors under cover and off ground. Doors with dents or other defects not repairable will be rejected.
- B. Store frames in upright position.

PART 2 - PRODUCTS

2.01 HOLLOW METAL DOORS

- A. Shop fabricate and finish to required sizes and shapes. Form and weld with straight arrises, edges, and corners; surfaces free from warp, wave, buckle, dents, or other defects. Use of excessive metallic filler to conceal manufacturing defects is not acceptable.
 - 1. As standards of quality, exterior doors shall be equal to Steelcraft "B Series", Ceco "Medallion Series", Curries "747 Series", or Republic "DS Series".
 - 2. As a standard of quality, interior doors shall be equal to Steelcraft "LF Series", Ceco "Regent Series", Curries "707 Series", or Republic "DE Series".

METAL DOOR AND FRAMES

SEPTEMBER 2019

- B. Fabrication:
1. Flush doors, 1-3/4 inches thick, 18 gage steel face sheets over stiffeners, faces free of seams or joints. Close top and bottom edges by welding flush or with recessed 18 gage spot welded channels. Weatherproof top edge of exterior doors. Turn face sheets over vertical edges of doors and mechanically interlock, or weld to 18 gage vertical edge channels.
- C. Insulation: Door manufacturer's standard sound deadening material on door interior. Sound deadening material in labeled doors shall conform to UL requirements.
- D. Cutouts: Make cutouts for required glazing and louvers; provide steel non-removable stops on outside face and removable stops on interior face.
- E. Preparation for hardware: Factory prepare and reinforce doors for indicated finish hardware. Make cutouts and mortises for mortise hardware.
1. Provide 10 gage flat steel reinforcement for hinges; 16 gage for locksets and surface applied hardware. All gages minimum.
 2. Internal reinforcing shall prevent collapse of face sheets by stress of lockset installation. Provide reinforcement on both faces of doors for surface mounted closers, whether or not closers are indicated.
 3. Perform drilling and tapping for mortise hardware at factory to templates furnished by hardware vendor. Drilling and tapping for surface applied hardware by hardware installer.
 4. Comply with SDI-100, paragraph 2, 5, and Table IV, and SDI-107.
- F. Fire-Rated Labeled Doors and Frames:
1. Comply with SDI-100 and 118.
 2. All fire-rated doors and frames shall be labeled with UL, WH or FM labels for class required. Unless otherwise indicated, provide fire ratings as indicated on the Drawings.

2.02 PRESSED METAL FRAMES

- A. Frames shall be welded or knock-down type in accordance with CS242 as minimum requirements, plus additional requirements specified herein. Shop fabricate and finish with straight arises, edges and corners; surface free from warp, wave, buckle, dents or other defects. Use of excessive metallic filler to conceal manufacturing

METAL DOOR AND FRAMES

SEPTEMBER 2019

defects is not acceptable. As a standard of quality knockdown or three part frames shall be equal to “C Series” as manufactured by Timely.

1. Welded frames shall be field painted per Section 09 90 00.
 2. Knock-down or three part frames shall be pre-finished at the factory. As a standard of quality, appearance and available colors, pre-finished frames shall be equal to those of Timely Products.
 1. Primed frames will not be considered as pre-finished and shall be field painted per specification 09 90 00.
- B. Fabrication: Manufacturer's standard, 16 gage steel (18 gauge minimum at interiors), cross section profile as shown, depth to suit wall thickness. Provide applied metal door and glazing stops where required.
1. Welded frames shall have header and jambs secured at corners by internal welding of faces or by welding or mechanical interlock; exposed joints neat and tight. Provide temporary metal spreaders at bottom of welded frames to maintain rigidity. Welding per applicable standards of AWS for high grade hollow metal work.
 2. Transom frames shall be extension of jambs in one piece, same profile as jambs unless otherwise shown. Provide glazing stops.
- C. Anchors: Provide 3 anchors per door jamb, minimum, manufacturer's standard type, to securely fasten frames to wall construction involved (wire anchors not acceptable); also provide adjustable floor anchor at bottom of each door jamb. Provide minimum 2 anchors at end of frames. Anchors shall provide stiffness and rigidity to keep frames square, in accurate position without twisting, buckling or warping. Anchors for labeled frames shall conform to UL requirements.
- D. Preparation for hardware: Factory prepare and reinforce door frames for approved finish hardware. make cutouts and mortises for mortise hardware. Provide 10 gage steel reinforcement for hinges, 12 gage for lock strikes and closers, and 14 gage for surface applied hardware.
1. Provide reinforcement at head of frames for surface mounted closers whether or not closers are indicated.
 2. Punch lock jambs of frames; install rubber door silencers per Section 08 71 00.
 3. Provide steel housing closures for hardware mortise to prevent intrusion of

METAL DOOR AND FRAMES

SEPTEMBER 2019

plaster, mortar or concrete.

4. Perform drilling and tapping for mortise hardware at factory to templates furnished by hardware vendor. Drilling and tapping for surface applied hardware will be done by hardware installer.
- E. Sound deadening: Door frames shall have inside (concealed) faces coated with fibered asphalt emulsion similar to autobody undercoating. Apply over shop primer 1/8 inch thick and thoroughly dry before handling.
- F. Metal frames for glass lights in metal doors to be door manufacturers standard, minimum, two-piece, 18 gauge steel with mitered and welded corners, counter sunk for bolt-heads, factory baked-on primer finish with field painted finish, complete with oval head sex bolts

2.03 PRIMING

- A. Bonderize and factory paint doors and frames with one coat of baked-on rust inhibitive primer.
- B. Back coat frames with asphaltic emulsion wherever frames will be in contact with concrete.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Pressed metal frames: Coordinate with trades involved. Install frames level, plumb and square; fit bottom of jambs snugly to floor. Securely brace frames to prevent damage or distortion; remove temporary braces and spreaders when no longer required.
- B. Sealant: Seal perimeter of frames only where shown or required to fill space between frame and adjoining material. Sealant materials and application shall conform to applicable requirements of Section 07 92 00. Where sealant is entirely concealed and wall components forming door opening are not designed for differential movement, oil based caulking compound may be used; otherwise, use one part synthetic rubber sealant.
- C. Doors: Install metal doors; hardware installation is specified in Section 08710. Conform to clearance specified therein.

METAL DOOR AND FRAMES

SEPTEMBER 2019

- D. Doors: Hang with clearances of 1/8 inch at head and jambs, and 3/8 inch at thresholds, unless otherwise indicated or required for rated assemblies. Apply hardware in accordance with SDI-100 and the manufacturer's written instructions.
- E. Set wire glass with wire glass pattern to opening.
- F. Coordinate installation of hardware.

3.03 ADJUST AND CLEAN

- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Check and re-adjust operating finish hardware items, leaving metal doors and frames undamaged and in complete operating condition.

3.04 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.

- END OF SECTION-

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SECTION 08 21 00 – WOOD DOORS

PART 1 - GENERAL

1.01 RELATED WORK

- A. Metal Frames: Section 08 10 00
- B. Section 08 71 00: Door hardware
- C. Section 09 90 00: Painting

1.02 SUBMITTALS

- A. Refer to Section 01 30 00 - SUBMITTALS.
- B. Manufacturer's data: Submit complete specifications of door construction and manufacturer's literature for each type door required.
- C. Certification: Submit letter with doors, certifying that doors comply with applicable portions of Section 20, Manual of Millwork of Woodwork Institute (WI), latest revision.
- D. Guarantee: Guarantee doors against warping or twisting (not to exceed 3/16 inch from straight line measured top to bottom of door), face-checking or other defects. Guarantee period shall be life of installation for interior doors. Guarantee shall cover replacement of door plus costs of hanging and finishing.

1.03 DELIVERY, STORAGE AND HANDLING

Carefully pack and protect doors against damage while in transit and in storage. Materials that will stain or discolor hardwood finishes shall not be used. Store under cover in heated rooms, and in manner that will best protect materials from damage, including excess humidity.

PART 2 - PRODUCTS

2.01 MATERIALS AND CONSTRUCTION

- A. Solid core flush veneered wood doors: WI Custom Grade, 5-ply, made up of face veneers, cross-bandings, and core unit, or 7-ply made up of face veneers, cross-bands, back veneers, and core unit; securely bonded together by hot plate process.
 - 1. Use CS35 Type I (fully waterproof) adhesive for bonding face and back

WOOD DOORS

SEPTEMBER 2019

veneers and cross-banding to each other and to core; use Type II (water resistant) adhesive for bonding core unit strips and edge banding.

2. Bonded core field may be particle board per ANSI A208.1 and CS 236-66, or any combination of blocks or strips, with end joints tight, well staggered in adjacent rows, and with blocks or strips securely edge glued together under pressure. No open spaces between core blocks or strips; no defects in core blocks or strips large enough to show through face or materially affect strength of door.
3. Provide vertical edge bands, not less than 1 inch thick, any hardwood species closely matching face veneer in density and appearance. Provide top and bottom edge bands 2-1/4" inch thick with hardwood edge band, any species having density same as core species. Securely glue edge bands to core. Top and bottom bands may be secured in place with machine joint. Doweling of vertical to horizontal edge bands for oversize doors is permitted.
4. Face veneers for painted finishes: Meet requirements of paragraph 3.11.1 of NWMA I-S.1 birch species, uniform light, for paint and transparent finishes. Match for color at joints. Provide paint grade at locations as noted.
 - A. Rotary cut Birch for Paint finishes.
5. Cutouts: Article III D, Section 20, WI, shall apply. Seal edges of cutouts with spar varnish. Provide two sets of glazing molds, with one side removable. Set molds back from edges of openings not more than total thickness of face veneer and cross-banding.
6. Provide solid blocking at all locations for mounting of hardware.
7. Doors shall be delivered to the project site fully primed or sealed and finished according to the door schedule.
 - B. Caulking and sealant at glazing at vision panels shall be rated.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install wood doors plumb and square. Prepare doors to receive hardware; hardware installation is specified in Section 08 71 00.
- B. Fit doors to clearance indicated in "Door Clearance" and "Hardware Placement"

WOOD DOORS

SEPTEMBER 2019

articles in Hardware Section. Do not trim fitted doors more than 1/4 inch from any edge.

END OF SECTION

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SECTION 08 71 00 – FINISH HARDWARE

PART 1 - GENERAL

1.01 SCOPE:

- A. Furnish and install as directed finish or "builders" hardware in accordance with Drawings and as specified. Finish hardware includes hardware for all doors, and other movable parts of building.
- B. Intent of this section is to include all items of finish builder's hardware, except only those items specifically excluded here or noted on Drawings as NIC (Not in Contract). Hardware supplier shall be responsible for examining Drawings and Specifications and furnishing all hardware indicated on Drawings and/or specified here.
- C. Verify hardware items specified or indicated on Drawings for intended installation, proper size, function, code and Label requirements. Discrepancies shall be called to Architect's attention, not less than 7 days prior to bid opening, for instructions. No extra cost shall be allowed for changes necessary to these hardware items. Provide finish hardware with proper strikes, fasteners, and accessories to suit job conditions.
- D. Provide low voltage wiring for access control equipment and electrified door hardware. Furnish conduit to suit.
- E. Furnish miscellaneous locks, cores and cylinders to work described under other sections of these specifications.

1.02 RELATED WORK

- A. Section 06 20 00: Finish Carpentry
- B. Section 08 10 00: Metal Doors and Frames.
- C. Section 08 20 00: Wood Doors.

1.03 SUBMITTALS

- A. Refer to Section 01 30 00 - for submitting the following:
 - 1. List finish hardware proposed for this project, giving manufacturer's name and catalog number with specified item, and name of manufacturer if a substitute item is offered. Submittal required.

2. Product data. Submittal required.
3. Hardware Schedule (upon request): Submit at least five copies of the final Hardware Schedule in format specified, complying with the construction progress schedule requirements (for each draft). Hardware schedules are intended for coordination of the Work. Review and acceptance by the Architect does not relieve the Contractor of his exclusive responsibility to fulfill requirements as indicated and specified in a timely manner. Submittal required.
4. Samples (upon request): Furnish only upon request, prior to submittal of the last draft of the Hardware Schedule, and prior to delivery of the hardware. Submit one sample of each exposed hardware unit, finished as required, and tagged with full description for coordination with the schedule. Sample will be reviewed by the Architect or his representative for design, color, and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.
 - a. Samples will be returned to the supplier. Units which are acceptable and remain undamaged through submittal, review, and field comparison procedures may, after final check of operation, be used in the Work.
5. Certification or copies of closer testing conformance and 10 year manufacturer's warranty. Submittal required.

1.04 TEMPLATES

Furnish templates for hardware to be secured to metal work, and for other hardware requiring templates, to provide accurate setting and fitting. Furnish in ample time so as not to delay work.

1.05 PROTECTION

Protect hardware against deterioration and damage. Store in clean, dry area until installed.

1.06 QUALITY ASSURANCE

- A. Qualifications of Supplier: The finish hardware supplier shall provide the services of an Architectural Hardware Consultant (AHC), a member of the Door & Hardware Institute for consultation at no additional cost to the Owner during course of construction.
- B. Reference: ANSI standards A115 and A156 are to be used to define quality

standards for Finish Hardware.

- C. Catalog Standards: Manufacturer's catalog numbers in the Specifications are for convenience in identifying items; catalog descriptions of these items constitutes minimum requirements.
 - 1. The use of catalog numbers and specific requirements set forth in Drawings and Specifications does not preclude the use of any other acceptable manufacturer's products or procedures which may be equivalent, but establish a standard of design and quality for materials, construction and workmanship.

1.07 DOOR CLEARANCES

- A. Unless detailed otherwise on Drawings, provide following door clearances:
 - 1. Clearance:

Labeled doors	3/8" max over floor or threshold
No threshold	3/4" max for metal doors
	5/8" max for wood doors
Threshold	1/8" typical
Carpet	1/8" over top of nap
 - 2. Head and jamb clearance: 1/8" max.

1.08 HARDWARE PLACEMENT

Unless detailed otherwise, place hardware at following height above finish floor:

Latchset (centerline)	40-5/16"
Hinges	Per Title 24, Manufacturer's Standard
Door pull (centerline)	42"

PART 2 - PRODUCTS

2.01 KEYING

- A. Provide wrought boxes for strikes.
- B. Factory key cylinders.
- C. Furnish the following keying. Provide 5 keys per each new keyed lock

D. Key into existing key way system.

2.02 BUTTS AND HINGES

All butts shall have security lugs and non-removable pins for exterior doors. All butts for doors shall be ball or oilite bearing unless otherwise indicated. Labeled doors shall have steel butts, sheradized or zinc-plated prior to final plating. Interior butts shall be steel. All butts shall be of proper width to clear trim projection when the door swings 180 degrees. Non removable pins at security side of lock set s.

2.03 CLOSERS

Key value type. Furnish one key for each 5 closers. Fasten with 2 sex bolts per closer. Provide 180 degree opening where indicated. Provide parallel arms with jamb attachment for all out-swinging doors. Provide correct brackets at flush transom panel doors. All closers to have hold/open capabilities and integral stops. Closing effort shall not exceed a maximum operating effort of 8.5 lbs for exterior doors; 5.0 lbs for interior doors; 15.0 lbs for fire rated doors.

2.04 SCREWS, BOLTS, AND FASTENING DEVICES

Exposed heads oval Phillips type in countersunk holes, unless otherwise specified or required. Use screws, bolts, washers, grommets, nuts, and other fastening devices of appropriate length, type, head, metal and finish, as necessary for proper match and application of hardware.

2.05 LOCKSETS AND LATCHSETS

A. Heavy-duty cylinder type with lever handle; style and finish as to match existing.

2.06 HANDLING AND MARKING

Furnish hardware in proper "hand" for doors. package and mark hardware for door number, hardware type and location.

2.07 FINISHES

In general, provide finishes as follows, unless otherwise indicated:

Hinges: Match existing, US 26D (626)/US (32D)

Locks: Match existing, US 26D (626)

Closers SPRAYED ALUM

Trim: Match existing, US 32 (630)

Stops US 26D (626)

Special Items: Match existing, MILL FINISH
Others: Match existing, US 26D (626)

2.08 KICK PLATES

BBW No. 37 -2" LDW x 12 or equal. Provide at Restrooms and as scheduled on the Drawings

2.09 CLOSERS

LCN 4010 Series and 4110 parallel arm to suit swing.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install hardware in precise manner, in accordance with manufacturer's instructions; door clearance and hardware placement as specified. Predrill pilot holes in wood for screws. Drill and tap for surface mounted hardware on metal. Set hinge leaves snug and flat in mortises; turn screws to flat seat (do not drive).
- B. Mount door closers for maximum swing of door before setting stops. Silencers in place before adjusting strikes. Drive hinge pins down and tighten set screws.
- C. Install locks with keyways in proper position, and knobs, roses and escutcheons firmly affixed.
- D. Set thresholds in waterproof sealant and secure with lead shields and countersunk screws of same finish as threshold.
- E. Except for hinges, do not install hardware until completion of painting and finishing work.
- F. Adjust hardware so that moving parts operate freely without bind or excessive play. Installed hardware shall be free from paint, corrosion or damage.
- G. Adjust closers for closing speed, latching speed, back checking, and adjust hold-open devices for full control of door.

3.02 INSTALLATION AIDS, INSTRUCTION AND MAINTENANCE GUIDES

Upon completion of installation and adjustment, turn over to Owner dogging keys, closer valve keys, lock spanner wrenches, and other factory furnished installation aids, instructions and maintenance guides.

3.03 HARDWARE TYPES LIST

A. Catalog numbers used herein are those of following manufacturers:

Hinges:.....	Stanley
Locksets, Cores and Cylinders:.....	Match Existing
Closers:.....	LCN
Panic Exit Device.....	Von Duprin
Trim:.....	Glynn Johnson, Pemko
Floor/Wall Stops:.....	Glynn Johnson
Silencers.....	BBW
Thresholds/Smoke seals/Soundseals:.....	Pemko

B. Hardware of same quality, material, and function by other manufacturers will be accepted, subject to approval of the Architect.

C. Hardware Groups:

GROUP 1: (Single, SC Wood, Privacy lock, non-rated)

1 1/2 pr.	Butts	Stanley FBB179 - 4 1/2" x 4 1/2"
1	Privacy Lockset	ANSI F76 x Lever
1	Self-closer	LCN
3	Silencers	BBW W-07
1	Wall Stop	GJ WB9X

GROUP 2: (Single, SC Wood, Passage, non-rated)

1 1/2 pr.	Butts	Stanley FBB179 - 4 1/2" x 4 1/2"
1	Latchset	ANSI F75 x Lever
3	Silencers	BBW W-07
1	Wall Stop	GJ WB9X

GROUP 3 (Single, Hollow Metal, Exterior Entry, non-rated),

1 1/2 pr.	Butts	Stanley FBB179 - 4 1/2" x 4 1/2" S/S NRP
1	Exit Device	Rim Exit Device CD99L-NL x 992L-Rx06 lever

1	Cylinder	Match existing key-way
1	Closer	LCN
1	Weatherstripping	Pemko 297AS
1	Automatic drop seal	Pemko 420SL (concealed)
1	Floor stop	Trimco F1211
1	Door bottom drip	Pemko width door
1	Door head drip	Pemko width door plus 4"
1	Threshold set	Pemko 195A, 192A (3"), (196A as occurs)

- END OF SECTION-

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SECTION 09 10 00 – LIGHTGAUGE METAL FRAMING

PART 1 - GENERAL

1.01 SCOPE

- A. Provide non-bearing interior light gauge metal framing and support systems including but not limited to studs, tracks, fabrications, anchors, fasteners, connectors, bracing, backing, furring and related accessories as shown on Drawings and specified here.
- B. Provide and install all formed and fabricated sheet metal shapes which are part of the light gauge metal framing and support systems as indicated on the Drawings.
- C. Provide and install all formed and fabricated sheet metal shapes which act as closers and retainers at expansion joints at light gauge framed partitions and furrings and at junctions of light gauge framed partitions and furrings to other walls and partitions, as indicated on the Drawings.
- D. Provide flat, radiused and domed suspension systems including hangers and bracing to interior gypsum wallboard ceilings and soffits.
- E. Provide and install all sheet metal anchored to horizontal suspended light gauge framing and support systems at gypsum board ceilings where indicated on the Drawings.
- F. Provide and install all clips, anchors and attachment devices as required and as shown on the Drawings to secure metal framing and support systems to structure.

1.02 RELATED WORK

- A. Section 05 50 00: Miscellaneous Metals
- B. Section 06 10 00: Rough Carpentry
- C. Section 07 21 00: Insulation
- D. Section 09 25 00: Gypsum Wallboard

1.03 REFERENCES

- A. The following references, codes and standards are hereby made a part of this Section and light gauge metal framing and suspension systems shall conform to the

applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing in the Drawings or these Specifications shall be construed as permitting work, which is contrary to code requirements.

1. Specification for the Design of Cold-Formed Steel Structural Members, Current Edition, American Iron and Steel Institute (AISI) Cold Formed Steel Design Manual.
 2. Specification for Metal Lathing and Furring, Metal Lath/Steel Framing Association.
 3. American Society for Testing Materials ASTM A-446, Specification for Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Physical (Structural) Quality.
 4. ASTM A-570, Specification for Hot-Rolled Carbon Steel Sheets and Strip, Structural Quality.
 5. ASTM A-611, Specification for Steel, Cold-Rolled Sheet, Carbon, Structural.
 6. American National Standards Institute ANSI A97-2, Installation of Steel Framing to Members to Receive Screw Attached Gypsum Wallboard and Backing Board.
 7. California Building Code CBC, 2016 edition.
 8. Lightweight Steel Framing Systems Manual, Current Edition, as published by Metal Lath/Steel Framing Association.
 9. Specifications for Structurally Welding Sheet Steel in Structures (D1.3); American Welding Society (AWS): Structural Welding Code (D1.1).
 10. ASTM Specifications C 754-82, "Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board or Water Resistant Backing Board".
- B. Metal framing for fire-rated assemblies, including materials and methods of application used, shall be approved by the I.C.B.O.

1.04 SUBMITTALS

- A. Refer to Section 01 30 00 for submitting the following:

1. Product data, including structural properties. Submit upon Architect's request only.
2. Shop drawings: Submit documents illustrating materials, shop coatings, steel thicknesses, details of fabrication, details of attachment to adjoining work, size, location, and spacing of fasteners for attaching framing to itself, details of attachment to the structure, accessories and their installation, and critical installation procedures. Drawings may include plans, elevations, sections, and details. Submit upon Architect's request only.
3. Samples: Samples shall be representative pieces of all framing component parts and accessories. Unless otherwise specified, pieces shall be 12" (304.8mm) long, tagged with name of part and manufacturer. Submit samples only on request.
4. Calculations: Engineering calculations or data shall be submitted verifying the framing assembly's ability to meet or exceed design requirements as required by local codes and authorities. Submit upon Architect's request only.
 - a. Steel framing used to support rigid materials shall be designed for allowable deflection of $L/360$. Steel framing used to support semi-rigid materials shall be designed for an allowable deflection of $L/240$.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends and labels intact. Store on site secure from weather, soil and physical damage.
- B. Handle and transport metal framing and support system products in accordance with the "Handling and Transportation" recommendations contained in the Lightweight Steel Framing Systems Manual, Current Edition, as published by the Metal Lath/Steel Framing Association.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Dale/Incor Light gauge Metal Framing, Dale Industries. (Specified)

- B. Marino/ Ware, Ware Industries, Inc.
- C. Ceco Corporation.
- D. Superior Steel Studs, Inc.
- E. Western Metal Lath Company.
- F. Approved equal.

2.02 METAL FRAMING MATERIALS

- A. All metal studs, runners and accessories, unless otherwise specifically approved by the Architect, shall be galvanized steel.
- B. Light gauge metal studs shall conform to ASTM C645 and the following additional requirements:
 - 1. Formed from hot-dipped galvanized steel sheet; minimum coating G60 in accordance with ASTM A525.
 - 2. All metal studs and accessories shall meet or exceed the minimum requirements of Federal Specification QQS-698 and QQS-775d, class D, for the item and use intended.
- C. Studs and runners shall be channel-type, roll-formed, in the following sizes and gauges unless otherwise noted on the Drawings.
 - 1. Interior Studs:
 - a. 20 gauge for 3-5/8" and greater studs (typical).
 - b. 18 gauge for 3-5/8" and greater studs at tiled walls. (Non-bearing or non-shear walls when approved by the Architect.)
 - c. 25 gauge for 3-5/8" studs at locations indicated or where approved by the Architect.
 - d. 20 gauge for 2-1/2" studs (typical).
 - e. 16 gauge studs in sizes and at locations as indicated on the Drawings.

- f. 25 gauge for 1 5/8 studs.
2. Stud Design Characteristics:
- a. 2-1/2" x 20 gauge steel studs: C-stud x 2-1/2" x 1-5/8" flange x 20 gauge similar to Dale/Incor CN product.
 - b. 3-5/8" x 18 and 20 gauge steel studs: C-stud x 3-5/8" x 1-5/8" flange x 18 and 20 gauge similar to Dale/Incor CN product.
 - c. 4" x 18 and 20 gauge steel studs: C-stud x 4" x 1-5/8" flange x 18 and 20 gauge similar to Dale/Incor CN product.
 - d. 6" x 18 and 20 gauge steel studs: C-stud x 6" x 1-5/8" flange x 18 and 20 gauge similar to Dale/Incor CN product.
 - e. 2-1/2", 3-5/8", 4" and 6" x 18 and 20 gauge tracks, stud tracks and track runners: 2-1/2", 3-5/8", 4" and 6" x 1-1/4" flange x 18 and 20 gauge similar to Dale/Incor TC products.
 - f. 1 5/8" x 25 gauge steel studs, tracks and track runners to suit.
3. At all interior tiled walls, unless otherwise indicated, provide 18 gauge (minimum) galvanized punched C-studs, runners and accessories equal to Dale/Incor CN and TC products. Subject to approval by the Architect at non-shear and non-bearing walls.
4. At locations as indicated on the Drawings, provide 16 gauge galvanized punched C-studs, runners and accessories equal to Dale/Incor CN and TC products.
5. Provide double studs at each side of all door openings, window openings and other framed openings equal to the same gauge of wall studs, but not less than 20 gauge, unless otherwise indicated on the Drawings.
6. 14 gauge galvanized cold rolled angle (CRA): 1-1/4" x 1-1/4" x 14 gauge as indicated on the Drawings or as otherwise required similar to Dale/Incor products.
7. 16 gauge galvanized cold rolled channel (CRC): 1-1/2" x 9/16" x 16 gauge as indicated on the Drawings or as otherwise required similar to Dale/Incor products.

Refer to Drawings for additional stud size and gauge information.

12, 14, 16 and 18 gauge steel joists equal to Dale/Incor JW, JWE and SCJ sections suitably sized and as indicated on the drawings.

- D. Provide studs with web shaving not less than 2 knockouts, one of which being no more than 12" from bottom end of stud and at least one in upper 1/4 of stud length. Provide studs with at least 1 additional knockout located at approximate mid-height of stud at studs 12' in length and longer. Punch knockouts for horizontal alignment.
- E. Provide lintels and headers fabricated from suitably sized double galvanized steel joist sections equal to Dale/Incor JW, JWE and SCJ Joists.

2.03 FLOOR AND CEILING RUNNERS

- A. Floor and ceiling runners for use with light gauge non-bearing metal studs shall be 16 gauge where indicated and stud manufacturer's regular type for size of studs required elsewhere, runners shall be same width and of equal or heavier gauge.
- B. Where studs extend to underside of deck or structure above, ceiling runners shall not be attached to the deck or structural element, but shall be attached to specified ceiling deflection track, double receiving channels, or detailed slippage joints as indicated or scheduled below.
 - 1. Ceiling deflection tracks shall be used at locations where studs are 20 gauge and lighter. Deflection tracks shall be equal to Superior #53, 20 gauge product.
 - 2. Double receiving channels shall be used at full height wall locations where the stud size is heavier than 20 gauge and slippage joints are not otherwise detailed. Construction of double receiving channels shall consist of upper channels doubled back to back with legs at uppermost channel slipped over a receiving channel.
 - a. Fabricate receiving channel from 16 gauge at interior walls, zinc coated steel sheet; 2 inch legs; width between outside face of flanges to provide tight slip-fit with stud ceilings runner channel.
 - b. Top ceiling runner channels shall be fabricated from 16 gauge zinc coated steel sheet to same overall width as standard runner track and shall have 1-1/2 inch legs. Lower ceiling runners of back to back pair shall be manufacturer's standard as hereinbefore specified.

- 3. For 18 or 16 gauge studs to underside of structure at interiors provide SLP-TRK by Slip Systems, Inc., or approved equal.
- 4. Refer to the Drawings for special slippage joint details.
- C. Floor and ceiling runners for use with metal studs shall conform to ASTM C645.
- D. Form floor and ceiling runners from hot-dipped galvanized sheet steel; minimum coating G60 in accordance with ASTM A525.
- E. Face of flanges of floor and ceiling runners to be heavily knurled for positive screw attachment.

2.04 METAL FURRING

- A. Light gauge Furring Channel shall conform to ASTM C645 and the following additional requirements:
 - 1. Formed from hot-dipped galvanized steel sheet; minimum coating G60 in accordance with ASTM A525.
 - 2. Minimum 25 Galvanized Sheet Gauge, minimum 0.297 lbs./ft.
 - 3. Hat-shaped in section with minimum 1-3/8" wide crown and minimum 7/8" deep. Brim formed with 1/2" flanges, stiffened with folded edges or longitudinally formed rib at centerline of each flange. Flanges may be 3/8" when 1/8" stiffened edge is upturned 90 degrees from brim. Crown shall be slightly recessed. Face of crown to be heavily knurled for positive screw alignment.
- B. Steel Furring Channel: Hot-rolled or cold-rolled steel, galvanized or with rust-inhibitive paint; minimum weight in accordance with following:

Channel Size (inches)	Weight (pounds per 1000 lineal feet)	
	<u>Hot-Rolled</u>	<u>Cold-Rolled</u>
3/4	300	300
1	410	410
1-1/2	1120	475

- C. Curved Drywall Ceilings: Heavy duty USG Suspension System complete with cross tees and accessories for radius and dome installations as indicated on the

drawings. Provide completely designed system complying with requirements of UBC Standard 25-2 and specified herein.

1. Requirements of UBC Standard 25-2 from Section 25-201 through Section 25.216.

2.05 METAL BACKING

- A. Provide metal backing for all equipment, wall door hold open, wall door stops, grab bars and other items anchored to light gauge metal framing work, and as indicated. Fabricate from zinc coated steel sheet (ASTM A-526 with Commercial grade zinc coating in accordance with ASTM A-525). Except where heavier gauge and/or larger size is indicated, fabricate from not lighter than 16 gauge steel (12 gauge for grab bars) at least 6 inches wide, terminate on framing member each end. Refer to Drawings for additional information.

2.06 ACCESSORIES

- A. Zinc-Coated Steel Sheet: ASTM A525, coating G60 minimum.
- B. Hanger and Tie Wire: Galvanized, soft annealed carbon steel wire conforming to Federal Specification AA-W-461, AISI number 1010, or 1006, Class 1 zinc coating; U.S. Steel Wire Gauge, unless otherwise specified.
 1. Hanger Wire: Prestraightened; gauges as specified.
 2. Tie Wire: Gauges as specified.
- C. Bridging: Cold formed steel channel or stud manufacturer's regular type bridging for studs with which used. Bridging shall be coated with a rust-inhibitive material.
- D. Attachment Devices: Devices for attaching framing members to supports, or to each other, shall be galvanized steel wire, or sheet metal depending on use and manufacturer's requirements.
- E. Welding Electrodes: AWS E60-XX.
- F. Additional materials required for a complete and proper installation of metal studs shall be new, first quality, in strict accordance with the recommendations of the manufacturer of the metal furring used, and subject to approval of the Architect.

2.07 TOLERANCES

Partition and suspended ceiling framing and furring shall be sufficiently even to contact a 10' long straightedge, in any direction, with a tolerance of 1/8".

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to work of this Section, carefully inspect and verify that the installed work is complete to the point where this installation may properly commence.
- B. Verify that metal framing and support systems may be installed in strict accordance with the original design and the manufacturer's recommendations.
- C. In the event of discrepancy, immediately notify the Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PREPARATION

- A. Accurately lay out all partition and wall lines from the dimensions given on the Drawings and previously verified in the field by Contractor.
- B. Erect materials of this Section in accordance with the referenced Standards.

3.03 INSTALLATION

- A. Install all metal framing and support systems in strict accordance with the approved submittal of manufacturer's recommendations, anchoring all members in position for long life under hard use.
- B. Coordination of backing and blocking:
 - 1. Carefully coordinate all requirements for backing support of items to be mounted on the finished assemblies.
 - 2. Carefully coordinate all requirements for pipes and other items designed to be housed within the partitions and wall system.
- C. Floor and Ceiling Runners: Install all floor and ceiling runners to receive studs. Align runners accurately to assembly layouts at both floor and ceiling.
 - 1. Where studs extend to underside of deck or structure above provide ceiling runners as hereinbefore specified, and as indicated.

- a. Fill all voids between ceiling runners and deck or structure with rock wool safing insulation where fire rated walls extend to underside of deck.
2. Where studs extend to underside of wood deck or structure above, secure ceiling runners as follows or as otherwise indicated on the Drawings.
 - a. Secure with minimum of #12 pan head wood screws at 24" o.c. unless otherwise noted.
 - b. Fill void of top ceiling runner with rock wool safing insulation prior to installation where walls are fire rated.
3. Securely anchor runners to the supporting structure as shown on the Drawings.
4. Provide complete, uniform and level bearing support for the bottom runners.
5. Securely anchor abutting lengths of runners to a common structural element, butt-welded or spliced.
6. Secure floor runners as follows at interior stud walls.
 - a. At concrete slabs secure interior wall floor runners with "Ramset" or "Hilti" .177" x 1-1/2" or equivalent, powder driven fasteners on 2'-0" centers (maximum spacing) and within 6" of the ends of each runner and within 6" of the ends of each joint.
7. At other locations, secure runners on not more than 24" centers, within 2" of each end and within 2" each side of each joint.
 - a. Secure with "Ramset" or "Hilti" .177" x 1-1/2" or equivalent, powder driven fasteners to concrete only; do not use on masonry.
 - b. Secure runner track to ceiling framing by wire tying ceiling runner track to furring channels.
- D. Metal Studs: Space studs at not more than 16" on centers, unless otherwise indicated or required by fire rated assemblies.
 1. Except for studs above and below openings, install studs continuous from floor to ceiling runner track or underside of deck or structure where indicated. Splices in studs will not be permitted.

2. Studs to have full bearing on bottom of floor runner track.
3. Install studs plumb and aligned and securely attach to flanges of both upper and lower runners.
4. Provide temporary bracing, where required, until erection is completed.
5. Frame in openings with headers or lintels and install jack studs above and below openings.
6. Place studs in direct contact with all door frame jambs, abutting partition corners.
7. Provide double studs at door and window jambs.
8. Anchor all studs for shelf-walls and those adjacent to window frames, partition intersections and corners to ceiling and floor runner flanges by screw attachment or approved punch-lock crimp.
9. Anchor all studs adjacent to door frames to ceiling and floor runner flanges by screw attachment only.
10. Securely anchor studs to jamb and head anchor clips of door and borrowed-light frames by bolt or screw attachment.
11. Anchor all headers and lintels to jamb studs by screw attachment.
12. Size and construct lintels, headers and gussets in accordance with the metal framing system manufacturer's recommendations as published in the manufacturer's product literature, for opening size, wall thickness and finish material design loads as required by the referenced Codes and Standards and as indicated on the Drawings.
13. Tie 18 and 16 gauge assemblies to lighter gauge assemblies that occur in the same construction with splices and straps in accordance with the metal framing system manufacturer's recommendations and standard construction details, the referenced Codes and Standards, and as indicated on the Drawings.
14. Unless otherwise indicated on the Drawings, secure runners to studs by screw attachment in accordance with the metal framing system manufacturer's recommendations and standard construction details and as

required by the referenced Codes and Standards. In no instance shall the runners be secured to the studs with less than two (2) 5/8" low profile head framing screws at each side of stud.

- a. Screws shall be of sufficient size to insure the strength of the connection.
- b. Welded connections shall be only used when approved by the Architect and constructed in accordance with the metal framing system manufacturer's recommendations and standard construction details and the referenced Codes and Standards. All welds shall be touched up with a zinc-rich paint.
- c. Wire tying of components shall not be permitted.

15. Secure all required gussets, stiffeners, clips, straps, ties, bracing, etc., or accessories with self drilling attachments in accordance with the metal framing manufacturer's recommendations and standard construction details and as required by the referenced Codes and Standards.

E. Installation of Suspended Ceiling Framing:

1. General: Install in accordance with Chapter 47, Section 2504, Uniform Building Code, 1997 edition, and as specified.
2. Main Runners: 1-1/2" cold-rolled or 1-1/2" hot-rolled steel furring channels. Spacing not to exceed 4'-0" on centers.
3. Main Runner Hangers: Specified prestraightened hanger wire in accordance with UBC Section 2504.3.
 - a. For 1-1/2" cold-rolled channel: Minimum No. 8 gauge wire.
 - b. For 1-1/2" hot-rolled channel: Minimum No. 8 gauge wire, except that No. 9 gauge wire may be used where the ceiling area supported by the hanger does not exceed 12.5 square feet.
 - c. In accordance with UBC Table 25-A, for 1-1/2" cold-rolled channels spacing of hangers along each runner shall not exceed:
 - (1) 4'-0" for runners spaced up to 3'-0" o.c.
 - (2) 3'-6" for runners spaced 3'-1" to 3'-6" o.c.

- (3) 3'-0" for runners spaced 3'-7" to 4'-0" o.c.
- d. For 1-1/2" hot-rolled channels spacing of hangers along each runner shall not exceed 4'-0".
- e. Attachment of hangers shall be in accordance with UBC Section 2504.3.
 - (1) At Main Runner: Saddle-tie lower end of wire hanger around main runner to develop the full strength of the hangers. Draw up taut and wrap at least 3 times around itself.
 - (2) At Wood Framing: Threaded fasteners to suit in accordance to referenced Standards and Manufacturer's recommendations.
- 4. Cross furring shall be in accordance with UBC Section 2504.4.
 - a. For Gypsum Wallboard: Use specified light gauge furring channel.
 - (1) Typical Furring Space: 16" on centers, maximum, unless otherwise noted.
 - (2) Other: Cross furring spaced at 24" o.c. maximum where indicated, to be 1" furring channels.
 - b. Attachment of Furring: Saddle-tie cross furring at each runner with not less than one strand of No. 16 gauge or 2 strands of No. 18 gauge tie wire or an approved equivalent attachment method.
 - c. Splice connect ends of cross-furring by lapping and interlocking the pieces eight (8") inches minimum and tying near each end with double loops of No. 16 gauge wire.
- 5. Openings and Penetrations:
 - a. Provide furring around light fixtures, registers, pipe and duct penetrations, access panels and other openings and penetrations.
- 6. Bracing and Connections:

- a. Provide all bracing for suspended framing, and all connections to building framing for furring runners and cross furring; all as indicated.
- b. Lateral System:
 - (1) Seismic brace ceiling using #12 diagonal wires spaced on a 12' x 12' grid and within 4'-0" of walls. Seismic brace to be located at intersection of main runner and cross-furring member. Provide connection between diagonal wires and main runner so as to prevent slipping. 200# approximate seismic load.
- c. Provide sets of four 12 ga. splayed bracing wires oriented 90 degrees from each other at the following spacing:
 - (1) Place sets of bracing wires at a spacing not more than 12 feet by 12 feet on center.
 - (2) Provide bracing wires at locations not more than 1/2 the spacings given above from each perimeter wall and at the edge of vertical ceiling offsets.

The slope of these wires should not exceed 45 degrees from the plane of the ceiling and should be taut without causing the ceiling to lift. Splices in bracing wires are not to be permitted without special Building Department approval.

- 7. Light Fixture Support:
 - a. All recessed or drop-in light fixtures shall be supported directly by main runners or by supplemental framing which is supported by main runners.
 - b. Surface mounted fixtures shall be attached to a main runner with a positive clamping device made of material with a minimum of 14 gauge. Rotational spring catches do not comply.
- 8. Wall Angles: Where required by code provide 1-1/2" cold rolled or hot rolled wall angles. Secure to solid backing with No. 8 x 2-1/4" pan head sheet metal screw. Secure cross furring or main runners to angle with pop rivets.

- F. Sound Partitions: At all sound partitions, set floor runners in two 1/4" diameter continuous beads of acoustical caulking. Provide products as described under Section 09 25 00 - Gypsum Wallboard and Section 07 92 00 - Sealants and Caulkings.
- G. Diagonal Wall Bracing: Diagonally brace ceiling height metal stud walls constructed with 4 inch or less wide studs and not exceeding 10'-2" in height at 4'-0" o.c. to the structure above when unbraced length of wall exceeds 8'-0". Construct bracing as detailed on the Drawings.
 - 1. Provide diagonal bracing for walls constructed with studs greater than 4 inches wide or exceeding 10'-2" in height at locations as indicated on the Drawings. Construct bracing as detailed on the Drawing.
 - 2. Place studs in walls under diagonal bracing to resist the vertical components.
- H. Furring:
 - 1. Size and install furring in accordance with the "Standards" hereinbefore specified.
 - 2. Spacing of furring for gypsum wallboard and gypsum lath shall not exceed 16 inches on centers.
 - 3. Spacing of furring shall not exceed that required for the types of plaster bases to be used. Verify types of plaster bases to be used and the maximum spacing of supports required at various locations.
 - 4. Light gauge furring channels shall not be used to support metal lath plaster bases.

3.04 INSTALLATION OF METAL BACKING

- A. Securely attach backing plates to metal framing across a minimum of three (3) studs or other framing members.
 - 1. Where screwable studs are available, attach with at least (3) three 5/8" low profile head sheet metal screws equal to USG Type S-12 Low Profile Head Screws at each stud.
 - 2. Where screwable studs are not available, attach backing plates by welding in accordance with metal framing system manufacturer's recommendations and standard construction details and the referenced Codes and Standards.

- B. Notify the Architect at the completion of installation of metal backing plates and prior to installation of any work which would conceal the backing plates or their attachment to the metal framing work.

3.05 ANCHOR VALUES AND TESTING REQUIREMENTS

- A. Anchor Load Table:

<u>DIA.</u>	<u>EMBED.</u>	TENSION WITH SPECIAL <u>INSPECT.</u>	TEST <u>LOAD</u>	<u>SHEAR</u>
Hilti Kwik-Bolt Anchor			ICBO Report No. 2156	
1/4"	1-1/4"	225#	360#	380#
1/4"	2-1/2"	645#	1032#	380#
3/8"	1-5/8"	516#	826#	860#
3/8"	3-1/2"	785#	1256#	870#
1/2"	2-3/4"	1320#	2128#	1710#
1/2"	4-1/2"	1670#	2672#	1710#
Hilti Drop-In Anchor			ICBO Report No. 2895	
3/8"	1-5/8"	795#	1271#	975#
1/2"	2"	1000#	1600#	1470#
5/8"	3-1/2"	1440#	2304#	2570#
5/8"	5-1/2"	1740#	2784#	3070#

- B. Actual loads on anchors are not to exceed 80% of the tension and shear values listed above.
- C. Test load values are 80% of twice the tension and shear values listed above.
- D. 20% of the expansion anchors on each job may be proof load tested to twice 80% of the ICBO recommended allowable load in tension for that particular anchor except that if the design load is less than 75 pounds, only one anchor in ten need be tested. If any anchor fails, then test all anchors.
1. Costs for initial testing are to be fully borne by the Owner.
 2. Costs for additional testing or retesting as a result of failure of an anchor

during initial testing are to be fully borne by the Contractor. The Contract Amount will be adjusted by Change Order, in accordance with the Conditions of the Contract, to reflect any costs incurred by the Owner resulting from additional testing or retesting due to anchor failure.

3.06 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

END OF SECTION

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SECTION 09 25 00 – GYPSUM WALLBOARD

PART 1 – GENERAL

1.01 SCOPE

- A. Provide all gypsum wallboard work, including, but not limited to trims and accessories.
- B. Coordinate surface finish treatments with other trades.
- C. Provide spray texturing of wall and ceiling surfaces to match existing and receive new finishes as scheduled.
- D. Provide refinishing of existing wall and ceiling surfaces at existing areas adjacent to and affected by new work.

1.02 RELATED WORK

- A. Section 07 92 00: Sealants and Caulkings.
- B. Section 09 90 00: Painting.

1.03 SUBMITTALS

- A. Refer to Section 01 30 00 - SUBMITTALS.
- B. Material list: Submit list of all products proposed for use.
- C. Sample panel: Lay up 3' x 3' sample panel of each system wallboard finish under Architect's supervision. Do not proceed until samples have been approved. Sample shall include a tape joint, fastener cover, all toppings and coatings, spray finish textures and/or paint finishes of semi-gloss paints.

1.034 QUALITY ASSURANCE

- A. Fire-resistance ratings: Where work is indicated for fire-resistance ratings, including those required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities, including UL and UBC.
- B. Industry standard: Comply with applicable requirements of GA-216 "Application and Finishing of Gypsum Board" by Gypsum Association, except where more detailed or more stringent requirements are indicated, including recommendations of manufacturer.

- C. Allowable tolerances: 1/8 inch offsets between planes of board faces and 1/4 inch in 8 feet for plumb, level, warp and bow.
- D. Manufacturer: Obtain gypsum boards, trim accessories, sealers, primers, top coatings, adhesives and joint treatment products from single manufacturer, or from manufacturers recommended by prime manufacturer of gypsum board.

1.05 PRODUCT HANDLING

Deliver materials in original packages, containers and bundles, bearing manufacturer's label and brand. Neatly stack materials flat, taking care to avoid undue sagging or damage to board surface or edges. Keep materials dry and, if stored outside, stacked off ground on level platform fully protected from weather.

1.06 ENVIRONMENTAL CONDITIONS

Do not install wallboard or joint compounds if building temperature is below 55 degrees F or if proper ventilation is not provided to eliminate excessive moisture from building.

PART 2 - PRODUCT

2.01 MATERIALS

- A. Gypsum Boards:
 - 1. Gypsum Wallboard Type 1: Regular Gypsum Wallboard, ASTM C-36, Fed. Spec. SS-L-30D, Type III, Grade R and ANSI A69.1; USG Sheetrock SW, Domtar Gyproc Regular, Gold Bond Sta-Smooth, or approved equal; beveled tapered edge, 5/8 inch thickness unless otherwise indicated.
 - a. Use typically unless otherwise indicated.
 - 2. Gypsum Wallboard Type 2: Fire Resistant Type "X" Gypsum Wallboard: Fed. Spec. SS-L-30D, Type III, Grade X and ANSI A69.1; ASTM C-36, USG Sheetrock Firecode "C"-SW, Gold Bond Fire-Shield Sta-Smooth, Domtar Gyproc Fireguard Type X, or approved equal; Type "X", beveled tapered edge, 5/8 inch (15.9mm) thickness unless otherwise indicated.
 - a. Use on fire rated walls and other locations as noted, or in lieu of Type 1
 - 3. Exterior Gypsum Sheathing, ASTM C-29, Fed. Spec. SS-L-30D, Type II, Grade X & W and ANSI A69.1; USG Sheathing, Gold Bond Gypsum

- Sheating, or approved equal. Type X & W, T & G 1/2" asphalted core, water-repellent paper surface both sides unless otherwise indicated. Use at exterior walls and at locations as indicated.
- a. Use at areas of exterior infill.
4. Gypsum Wallboard Type 3: Water Resistant Type "X" Gypsum Wallboard, ASTM 630, Fed. Spec. SS-L-30D, Type VII, Grade WX and ANSI A69.1; USG Sheetrock Firecode "C", Gold Bond MR Fireshield, Domtar Gyproc Moisture-Guard Type X, or approved equal; moisture resistant board, Type "X", tapered 5/8 inch (15.9mm) thickness unless otherwise indicated.
- a. Use on fire rated walls and ceiling at restrooms, toilet rooms and other locations as noted.
5. Gypsum Wallboard Type 4: Water Resistant Gypsum Wallboard, ASTM 630, Fed. Spec. SS-L-30D, Type VII, Grade R and W, Type WR ANSI A69.1; USG Sheetrock, Gold Bond MR, Domtar Gyproc Moisture-Guard, or approved equal; moisture resistant board, 5/8 inch (15.9mm) thickness unless otherwise indicated.
- a. Use on walls and ceilings at toilet rooms.
- B. Trim accessories: Manufacturer's standard galvanized steel units, including beads, edge trim, and casings. Provide expansion joints at exterior soffits.
- C. Furring channels: Roll-formed, hat-shaped sections as indicated in Drawings; 26 ga. galvanized steel.
- D. Joint treatment materials: Tape and joint compounds, ASTM C475; type recommended by manufacturer for application indicated, except as otherwise noted.
- E. Miscellaneous materials: Provide auxiliary materials for gypsum drywall work of type and grade recommended by manufacturer of gypsum board.
1. Laminating adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.
 2. Acoustical sealant: Highly elastic, water-based compound, specifically formulated for acoustical sealing. Non-bleeding, non-staining, pumpable and easily applied in beads.
 3. Sealer, primer, top coatings in accordance with gypsum board manufacturer's recommendation to prepare surface to receive the specified

paint finishes.

- F. Gypsum board fasteners: Comply with GA-216 and UBC Table 25-G.
 - 1. Metal supports: Special flathead Phillips self drilling, sheet metal type, rust inhibitive coated screws for use with power driven tool.
- G. Texture Primer: Flat Paint or Flat White Pigmented Shellac per wallboard and texture manufacturer's recommendations.
- H. Wall and Ceiling Texture, for use on all gypsum wallboard that is to be painted unless scheduled otherwise: USG Spray Texture, Gold Bond Wall Spray Texture, Domtar Wall and Ceiling Spray Texture, or equal. Asbestos-free wall texture with no aggregates applied to a spray finish texture to be overcoated with paint.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

Correct unacceptable sub-surfaces before proceeding with installation. Starting of work will indicate acceptance of such surfaces.

3.02 COORDINATION

Coordinate work to avoid delays and interference with work of mechanical, electrical, and other trades.

3.03 INSTALLATION

- A. Fire-resistive ratings: Where fire rated construction is indicated, install wallboard assembly to provide fire-resistive rating required.
- B. Sheet arrangement layout: Conform to layouts and requirements indicated; use long sheets to restrict joints to minimum.
- C. Joints: Butt sheets loosely together with tapered edges always placed together. Sand or kerf cut edges and mill ends to provide smooth jointing on exposed face. Stagger end joints.
- D. Fasteners: Place fasteners 3/8 inch from edges of boards, except when using washers or clips with fasteners in joint. Install fasteners with heads dimpled slightly below surface; do not cut through paper. Space fasteners in accordance with GA-216 and manufacturer's recommendations, except as otherwise required by CBC.

- E. Ceilings: Place boards with long dimensions at right angles to supports and end joints occurring over supports. Place perimeters of ceilings and edges of openings over solid bearing members.
- F. Partitions: Place boards with long dimension either vertical or horizontal (but not combination of both) on studs. Stagger joints on opposite sides of partitions. Locate joints at least 12 inches from jambs of openings. Keep end joints to minimum.
- G. Caulking: Using double bead of specified material, install at floors, wall intersections, where walls abut other materials and at all electrical boxes. Install wherever caulking material is indicated in connection with wallboards. Apply in accordance with manufacturer's printed directions.
- H. Cutting and Scribing: Cut neatly to fit around outlets, switch boxes and other protrusions, using keyhole saw or specially designed cutting tool for opening of exact shape and size needed.
- I. Trim: Edge exterior corners with bead set to true, plumb line. Where wallboard joins or abuts any material other than wallboard, cover end of board with metal casing, leaving joint sufficient for installation of caulking.
- J. Acoustical sealant: Place acoustical sealant within partitions in accordance with manufacturer's recommendations. Install acoustical sealant at gypsum board perimeter at acoustical insulated partitions at:
 - 1. Base layer of double layer applications.
 - 2. Face layers of acoustical insulated partitions.

Caulk all penetrations of partitions by conduit, pipe, ductwork, rough-in boxes, and similar items.

3.04 TAPING AND FINISHING

- A. Environmental Conditions: Control heating and ventilating during finishing operations to ensure the maintenance of 55 degrees F minimum temperature.
- B. Finish all joints, screw and nailhead depressions, applied metal trim and surface blemishes, applying tape and compounds in strict accord with manufacturer's printed directions.
- C. Level 5 joint treatment typical.

D. First Coat:

1. Spread compound evenly over all joints, using suitable tools designed for the purpose.
2. Fill all joint recesses and metal trim.
3. Center the reinforcing tape on the joint and press into the fresh compound, wiping down with sufficient pressure to remove excess compound but leaving sufficient compound under the tape for proper bond.
4. Feather all edges and leave the surface free from blisters and tape wrinkles.
5. Apply compound to all fastener recesses, leaving flush with the adjacent surfaces.
6. Fold reinforcing tape along its centerline and apply to all interior angles, following the same procedure as for joints.

D. Second Coat:

1. Lightly sand the dry compound with fine sandpaper to remove all irregularities.
2. Apply a second coat of compound to all joints, feathering approximately three inches beyond edges of tape.
3. Apply second coat to all fastener recesses; allow to dry.

E. Third Coat:

1. Lightly sand the dry compound with fine sandpaper to remove all irregularities
2. Apply a final skim coat, feathering out approximately two inches beyond second coat.
3. Third coat all fastener recesses and metal trim, and all interior angles; allow to dry.

- F. Spray Texture Coat: At all exposed gypsum wallboard surfaces except where surfaces are scheduled or specified for stipple paint or finish other than paint.

GYP SUM WALLBOARD

SEPTEMBER 2019

1. When machine applied spray texture coat is used, the third coat described above may be omitted provided all irregularities in gypsum wallboard are completely obliterated by the finished texture coat.
 2. Unless otherwise specified or scheduled, apply the single-coat spray texture coat to all surfaces in a degree of texture approved by the Architect to match approved sample.
 3. Where gypsum wallboard will be concealed above ceilings, etc., and where it will be covered by rigid material such as ceramic tile, wainscots, etc., finish coats of topping compound may be omitted.
 4. Finish Texture: Spray texture shall be as follows:
 - a. Walls: to match existing.
 - b. Ceilings: Light to match existing.
 5. Provide spray texture to existing walls and ceilings adjacent to and affected by new work. Provide texture to nearest corner, transition or break point.
- F. "Smooth" finish: Where smooth finish is called for on the Drawings, and where no other surface finishing is called for on the Drawings, carefully sand the third coat to a uniformly smooth surface completely free from irregularities visible at a distance of five feet.

3.05 CLEAN-UP

Remove empty containers, scraps of material and other debris, and leave premises broom clean. Clean adjoining work spotted or otherwise defaced by work of this Section.

-END OF SECTION-

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SECTION 09 30 00 - TILE

PART 1 – GENERAL

1.01 SCOPE

- A. Provide all labor and materials necessary for patching and repair of existing interior ceramic floor tile as indicated on the Drawings and specified here and as required to accommodate the new construction.

1.02 RELATED WORK

- A. Section 09 25 00: Gypsum Wallboard.

1.03 SUBMITTALS

- A. Refer to Section 01 30 00.
- B. List of materials: Submit complete listing of all materials proposed for use, with manufacturer's data. Indicate location of each.
- C. Certification: Furnish manufacturer's "Master Grade Certificate" bearing Tile Council of America (TCA) certification mark for all tile.
- D. Samples: Submit manufacturer's complete range for color and pattern selection.
- E. Sample panel: Lay up 3' x 3' sample panel of each tile under Architect's supervision. Do not proceed until samples have been approved.

1.04 PRODUCT HANDLING

Deliver all materials to job site in original labeled, unopened containers. Protect from moisture and dampness.

1.05 PROTECTION

- A. Barricade and prevent traffic in all tile areas during installation and curing period.
- B. Protect other surfaces or materials from damage.

1.06 EXTRA STOCK

Provide extra stock of 5 percent of each tile in each color for future needs of Owner. Extra to be from same batch as those actually installed.

PART 2 – PRODUCTS

2.01 SCHEDULED MANUFACTURERS/SUPPLIERS

- A. Dal Tile
- B. America Olean
- B. No Substitutions permitted

2.02 MATERIALS; PORCELAIN CERAMIC FLOOR TILE (Refer to Finish Schedule on the Drawings)

- A. Ceramic Wall Tile:
 - 1. Glazed interior wall tile: 4¼ inch x 4¼ inch x 1/4" thick, nominal dimensions.
 - a. Dal Tile: Glazed ceramic mosaics tile with colors as selected by the Architect from “Keystone” Series, price groups 1 and 2.
 - b. American Olean: Glazed ceramic mosaic tile with colors as selected by the Architect from “Satinbrites” and “Santinglo” series, price groups 1 through 3 for field color and 1-6 for accents.
 - c. Or equal.
 - 2. Pattern and Color Groups:
 - a. Ceramic wall tile shall consist of two patterned color groups with two colors per group in patterns as indicated on the Drawings. Field color and one row of horizontal accent tiles.
 - b. Radius edge at horizontal and vertical terminus points.
- B. Ceramic Base Tile:
 - 1. Porcelain glazed ceramic mosaic base tile shall be 4 ¼ inch x 6 inch high x ¼ inch thick, nominal dimensions to match glazed porcelain ceramic mosaic wall tile. Less than one half of one percent absorption.
 - a. Color patterns, groups and products to match glazed porcelain ceramic mosaic wall tile as specified herein and as indicated on the

Drawings.

- b. Square edge top where abuts to wall tile.

C. Ceramic Mosaic Floor Tile:

- 1. Unglazed, cushion edge, dust pressed, integral color, non-slip textures, 2 inch (5cm) x 2 inch (5cm) x 1/4 (6.4mm) inch thick, nominal dimensions. Less than one half of one percent of absorption.
 - a. Dal Tile Corporation “Keystone”: Porcelain ceramic mosaic tile with cushion edge. Colors as selected by the Architect from Price Group 1 and 2.
 - (1) Slip resistant abrasive grain.
 - b. American Olean: Porcelain ceramic mosaic tile with cushion edge. Colors as selected by the Architect from Price Group 3.
 - (1) Slip resistant abrasive grain.
 - c. Or equal.
- 2. Pattern and Color Groups: Ceramic mosaic floor tile shall consist of two color groups with one color per group.

2.03 MISCELLANEOUS TILE MATERIALS

- A. Special Shapes and Trim Shapes: Provide as shown or required for a complete installation of tile work. Special shapes provided shall include special corners, caps, stops, returns, trimmers, curb tiles, coved shapes, etc. Provide surface bull nose at exposed edges where tile abuts dissimilar material.

2.04 MIXES (parts by volume)

- A. Grout (light colors): 1 part white cement mixed with 1 part fine white sand and elastomeric latex additive recommended by manufacturer as suitable for this purpose. Color with mineral oxides for color selected by Architect to match existing.
- B. Grout (dark colors): 1 part gray cement mixed with 1 part fine sand and 1 part Anti-Hydro to each 10 parts water. Color with mineral oxides for dark color selected by Architect to match existing.

- C. Factory mixed grouts will be considered as equivalent to custom mixed grouts if colors available for selection by the Architect are from standard and optional/designer ranges of available colors and in the opinion of the Architect, they match the existing colors.

2.07 SETTING MATERIALS

- A. Grouts:
 - 1. Ceramic Mosaic Tile Grout: Bostik "Hydroment Ceramic Tile Grout and Joint Filler", Mapei "Keracolor Floor Portland Cement Grout", Laticrete "Floor Grout and Joint Filler", or approved equal latex amended, sanded grout and joint filler. Color as selected from manufacturer's full range of standard and designer (Grade II) colors including white.
 - 2. Glazed Ceramic Wall Tile Grout: Bostik "Hydroment Dry Tile Grout", Mapei "Keracolor Dry Tile Grout", Laticrete "Dry Set Wall Grout", or approved equal unsanded mildew resistant latex amended grout for use in joints 1/8" (3.2mm) wide or smaller. Color as selected from manufacturer's full range of standard and designer (Grade II) colors including white.
- B. Expansion/control joint backing material: Provide closed cell polyethylene foam weighing not less than 2.7 lbs, per cu. ft., and in dimension approximately 20% thicker than width of the expansion joint in which used.
- C. Expansion/control joint sealant: Provide in colors selected by the Architect.
 - 1. At joints between floors and walls, and at perimeter of metal door frames, provide mildew resistant one-part silicone material equal to Dow Corning "786".
 - 2. At joints in traffic areas, and at perimeter joints, provide two-part polyurethane material with Shore A hardness of 35-45.
- D. Water: Clean and potable.
- E. Portland cement complying with ASTM C-150, Type I and II.
- F. Sand complying with C-144.
- G. Latex Additives:

1. Bonding Coat: Laticrete 4237, Mapei Keracrete, Bostik Hydroment Upco-crete, or approved equal.
2. Grout Additive: Laticrete 3701, Mapei Plastijoints, Bostik Hydroment Acrylic Latex, or approved equal.
3. Leveling Coat: Laticrete 3701, Mapei Planicrete 50, Bostik Hydroment Upco-crete, or approved equal additive.

H. Cleaning Materials:

1. Acid Solution for Cleaning Unglazed Mosaic Units: 1 part hydrochloric acid (muriatic) in 10 parts of clean water and in accordance with the manufacturer's recommendations.
2. Cleaning materials for glazed tiles as per tile manufacturer's recommendations.

I. Sealer: Over all the grout joints and unglazed tile work of this Section, provide a sealer listed in the "Tested Materials" list of the Ceramic Tile Institute, and applied in strict accordance with the manufacturer's recommendations.

K. Provide all additional materials and accessories required for a complete installation. Provide as required or recommended by manufacturer's instructions or referenced standards.

2.08 INSTALLATION MATERIALS

A. Cleavage membrane/moisture barrier: Where indicated on the Drawings, and elsewhere as required for cleavage to prevent penetration of small amounts of water, provide a system using 0.004" (.1mm) thick polyethylene sheeting complying with ASTM D2103, or 15 lb. (6.8kg) asphalt-saturated felt complying with ASTM D226, or a similar system approved in advance by the Architect.

B. Edge strips: Design as required for the condition of use, and fabricate from Type 302 stainless steel unless other material has been approved in advance by the Architect.

PART 3 - EXECUTION

3.01 WORKMANSHIP AND INSTALLATION STANDARDS

A. Comply with TCA "Handbook for Ceramic Tile Installation", latest edition at time

of bid opening, for applicable substrate conditions.

- B. Prior to installation of the work of this Section, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- C. Examine surfaces to receive tile.
 - 1. Surfaces shall be free of dust, dirt, grease, paint and other foreign matter which would affect adequate bond.
 - 3. Concrete floor substrate shall be sufficiently rough to provide adequate mortar bond. Substrate shall be pitched to drains. In no case will variation in substrate of more than 1/8 inch (3.7mm) in 10 feet (3.1m) at thin set and 1/4 inch (6.3mm) in 10 feet (3.1m) for mortar set be acceptable.
- D. Verify that specified items may be installed in accordance with the approved design.
- E. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.
- F. Starting of work on any surface shall constitute unqualified acceptance of that surface as being satisfactory for tile work.

3.02 INSTALLATION

- A. General:
 - 1. Comply with pertinent provisions of the referenced standards, except as otherwise directed by the Architect or specified herein.
 - 2. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.
 - 3. Do not install tile floors over membrane until the membrane has been tested and accepted.
 - 4. Mix and use proprietary materials in strict accordance with the manufacturers' printed instructions.
 - 5. Prepare the surfaces, set, fit, grout, and clean the work of this Section in strict accordance with the referenced standards and the manufacturers' recommendations.

6. Barricade traffic over new surfaces or provide approved walkways.
 7. Provide leveling coat at existing sloped floor as required. Patch with epoxy floor fill.
- B. Install in accordance with pertinent provisions of the standards listed under "Quality Assurance" in Part One of this Section, pressing and beating tile into place to obtain 100% coverage by mortar on the back of each tile. Back-butter the tiles if necessary to achieve 100% coverage.
- C. Comply with ANSI standard installation specifications A-108.1 through A-108.10 and the Tile Council of America "Handbook for Ceramic Tile Installation", except as specified otherwise here.
- D. Installation Requirements and Methods for Setting Bed Types as follows:
1. SB-1: Use latex-portland cement mortar bond coat over existing sloped concrete floor for floor tile; comply with the applicable requirements of ANSI A-118.4, A-118.6, A-108.5 and A-108.10 TCA Handbook method F-112.
 2. SB-2: Use latex-portland cement mortar bond coat for wall tile and base; comply with the applicable requirements of ANSI A-118.4, A-118.6, A-108.5 and A-108.10, TCA Handbook method W243 at gypsum wallboard over wood studs.
- E. Bond coats:
1. Latex-portland cement mortar bond coat shall be 1:3 portland cement/sand gauged with Laticrete 4237, Mapei Keracrete, Bostik Hydroment Upco-crete or approved equal latex admix.
 2. Epoxy bond coat shall be prepared in accordance with the referenced standards and the manufacturer's recommendations and gauged with Bostik "Hydroment 1900", Laticrete "Latapoxy 210", Custom "Epoxy Crete", or approved equal additive.or approved equal epoxy admix.
- F. Limits of tile:
1. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruptions.
 2. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.

- G. Joining pattern: Match existing.
- H. Joint width: Match existing.
- I. Cut and drill tile for proper fit around fixtures and equipment in place; rub down exposed sharp edges of cuts with abrasive stone. Fit tile closely around outlets, pipes, fixtures and fittings so that plates, escutcheons and collars will cover cuts. Grind and fit carefully at intersections and against trim, built-in fixtures and accessories.
- J. Allowable variations in finished work: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes, and alignments shown:
 - 1. Horizontal surfaces: 1/8" (3.2mm) in ten ft. (3.1m) in all directions.
- K. Tile that is broken, chipped, marred, or is otherwise damaged; tile that is not firmly bonded; tile that is improperly fitted and tile that has poorly finished cut edges; tile work that does not comply with the referenced standards shall be replaced promptly without additional cost to Owner.
- L. Neutralize and seal substrates in accord with adhesive manufacturer's instructions.
- M. Unglazed tile shall be factory waxed or, when approved by the Architect, be field treated with grout release sealer prior to installation.

3.03 EXPANSION/CONTROL JOINTS

- A. Match Existing.

3.05 GROUTING

- A. General:
 - 1. Do not begin grouting floor or wall tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed.
 - 2. Remove spacers, ropes, glue, and similar foreign matter prior to grouting.
 - 3. When using proprietary grout, adhere strictly to the manufacturer's directions unless otherwise specified or approved in advance by the Architect.
- B. Installation:

1. Mix grout by hand or with a slow-speed drill motor not exceeding 300 rpm, achieving a stiff non-slumping consistency, and using the minimum amount of liquid to achieve a workable mix.
2. Force the maximum amount of the approved grout into joints in accordance with pertinent recommendations contained in ANSI A-108.10.
3. Fill the joints of cushion-edge tile to depth of the cushion; fill joints of square-edge tile flush with the surface.
4. Fill all gaps and skips.
 - a. Do not permit mortar or mounting mesh to show through grouted joints.
 - b. Provide hard finished grout which is uniform in color, smooth, and without voids, pin holes, or low spots.
 - c. Leave tile clean.

3.06 CLEANING, POLISHING AND SEALING

- A. After completion of setting and grout, thoroughly clean and polish the tile.
 1. Do not use acid or acid cleaners to clean tile.
 2. When the tile is thoroughly clean and dry, polish glazed tile with clean dry cloths.
- B. Apply sealer to all grout joints and unglazed tile work of this Section in accordance with the manufacturer's recommendations and referenced standards.

3.07 CURING

- A. Damp cure all tile installation, including portland cement grouts, for 72 hours minimum.
 1. Cover with 40 lb. kraft paper.
 2. Do not use polyethylene sheets directly over tile in horizontal surfaces.

308 PROTECTION

- A. Protect tile materials after installation to prevent damage and wear.

- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.09 CLEANING AND REPAIRING

- A. After installation sponge and wash tile thoroughly, then wipe with damp cloths and polish with dry cloths. Cleaning solutions shall be in accordance with the specified standards and the tile manufacturer's recommendations.
- B. Leave finished installation clean, free of cracked, chipped, broken, unbonded, or otherwise defective tile work. Remove and replace as directed.

END OF SECTION

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SECTION 09 51 00 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SCOPE

- A. Provide suspended T-bar and lay-in acoustical panel ceiling as indicated on the Drawings and specified here.
- B. Patch and repair existing T-bar and lay-in acoustical panel ceilings as indicated on the Drawings and specific here.

1.02 WORK INCLUDED

- A. Suspended metal grid systems complete with wall trim.
- B. Acoustical ceiling panels.

1.03 RELATED WORK

- A. Air diffusers within ceiling system: Refer to Drawings.
- B. Lighting fixtures within ceiling system: See Electrical Drawings

1.04 QUALITY ASSURANCE

- A. Standards for terminology and performance: Applicable publications by Acoustical and Insulating Materials Association (AIMA), including "Performance Data, Architectural Acoustical Materials".
- B. FM compliance: Class I.

1.05 SUBMITTALS

- A. Refer to Section **01 30 00**.
- B. Shop drawings: Submit shop drawings of acoustical ceiling system, clearly indicating grid layout and all related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to system and indicating locations of various types of tile and panels.
- C. Manufacturer's data: Submit manufacturer's product specifications and installation instructions for each acoustical ceiling material and suspension system, including

certified laboratory test reports and other data as required to show compliance with Specifications.

- D. Samples: Submit set of 12 inch square samples of each type of acoustical unit and 12 inch long sample of each exposed runner and molding. In each set of samples, show full range of exposed color and texture variations to appear in finished work.
- E. Maintenance/replacement stock: At time of completing installation, deliver stock of maintenance material to Owner. Furnish full size units from same "run" and matching units installed, packaged with protective covering for storage, and identified with appropriate labels. Furnish quantity at least equal to 1% of amount installed.

1.06 ENVIRONMENTAL CONDITIONS

- A. Do not install acoustical ceilings until building areas are enclosed, sufficient heat is provided, dust generating activities have terminated and overhead mechanical work is completed, tested and approved.
- B. Permit wet work to dry prior to commencement of installation.
- C. Maintain uniform temperatures of minimum 65 degrees F and humidity of 20% to 40% prior to, during and after installation.

1.07 GENERAL DESIGN REQUIREMENTS

- A. Provide completely designed system complying with requirements of UBC Standard 25-2 and specified herein.
 - 1. Requirements of UBC Standard 25-2 from Section 25-201 through Section 25.216.

PART 2 – PRODUCTS

2.01 CEILING SUSPENSION MATERIALS

- A. Comply with ASTM C635, as applicable to type of suspension system required for ceiling units indicated. Coordinate with other work supported by or penetrating through ceilings, including light fixtures and mechanical equipment.
 - 1. Main cross members and wall angles: Extruded aluminum alloy 6063-T5 or cold-rolled steel.

ACOUSTICAL CEILINGS
2019

SEPTEMBER

2. Structural class: Heavy duty system.
 3. Attachment devices: Size for 5 times design load indicated in ASTM C635, Table 1, Direct Hung.
 4. Hanger wires: Galvanized carbon steel, ASTM A641, soft temper, prestretched, yield-stress load of at least 3 times design load, but not less than 12 gage (0.106 inch).
 5. Acceptable system manufacturers: Match existing. Same as acoustical unit manufacturer or as follows:

Chicago Metallic Corp.	Donn Products, Inc.
Flangeklamp Industries, Inc.	Howmet Corp.
- B. System types:
1. Direct-hung exposed, rated and non-rated T-bar suspension systems: Manufacturer's standard exposed runners, cross-runners and accessories, of type and profiles indicated, with exposed cross-runners coped to lay flush with main runners. Provide standard width grid 15/16".
- C. Finish of exposed members: Provide uniform factory applied finish on exposed surfaces of ceiling suspension system including moldings, trim and accessories; color: White.

2.02 LAY-IN ACOUSTICAL PANELS

- A. Match existing.

2.03 MISCELLANEOUS MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation of suspended acoustical ceiling, shall be as selected by the Contractor subject to the favorable review of the Architect.
- B. Provide all necessary clips, wires and accessories to complete the suspension system.
- C. Suspension system members to be galvanized coated. Exposed material to be factory finished in low sheen satin white.
- D. Acoustical Sealant: Refer to Section 07 90 00 for joint sealants.

ACOUSTICAL CEILINGS
2019

SEPTEMBER

- E. Compressible Tape: Equal to Norton Tape Division "Bear vinyl foam sealant", 1/4" wide x 1/8" thick, gray color, adhesive on both sides.
- F. Closed Cell Sponge Neoprene: Equal to Pemko type 5/16" wide x 3/4" thick, black color with self adhesive.
- G. Compression Struts: Shall be equal to Donn/USG VSA Series Compression Posts with lengths as required to accommodate the installation.

PART 3 - EXECUTION

3.01 CONDITIONS OF SURFACES AND PRIOR WORK

Make certain that perimeter wall work, where ceiling abuts, is completed, dry. Make certain that all work has been installed and completed above ceiling. Comply with ASTM C636 Article 3, Interference of Ceiling Related Components; coordinate with other trades in this matter. Consult mechanical and electrical drawings for type and extend of their work becoming part of or penetrating ceiling.

3.02 CEILING SUSPENSION SYSTEM

- A. Conform to UBC Standard 25.209 as if included herein verbatim, and suspension system manufacturer's instructions for component assembly as supplemented hereinafter. Erect ceiling system level within 1/8 inch in 12 feet tolerance when measured in any direction, non-cumulatively; exposed members parallel with one another, in grid layout shown on Drawings.
- B. Make splices and intersections with interlocking device that draws members tightly together and prevents torsional deflection. In addition, comply with requirements of Article 1.06.
- C. Install perimeter molding and grid intersections so all fastenings are concealed; see Drawings.

3.03 ACOUSTICAL PANELS

Install in suspension system specified above, with main and cross runners exposed. Scribe and cut units to fit accurately at penetrations and edges requiring cut units.

3.04 ADJUSTMENTS

Adjust any sags or twists which develop in ceiling systems and replace any part which is damaged or faulty.

END OF SECTION

SECTION 09 65 00 – RESILIENT FLOORING AND BASE

PART 1 – GENERAL

1.01 SCOPE

- A. Provide resilient base as shown on Drawings and specified here.
- B. Provide all substrate preparation including cleaning, testing and the application of sealers or coatings as required for a complete and proper installation of resilient flooring materials.

1.02 RELATED WORK

- A, Section 09 25 00: Gypsum wallboard.

1.03 SUBMITTALS

- A. Refer to Section 01 30 00.
- B. Manufacturer's data: Submit list of all products proposed for use including flooring, base, adhesive and cleaners.
- C. Samples: Submit samples for pattern and color selection by Architect.
- D. Maintenance manual: Provide complete printed instructions on maintenance and care of installed resilient flooring and base for inclusion in maintenance manual for Owner.

1.04 PRODUCT HANDLING

- A. Delivery: Deliver materials to building site in manufacturer's labeled, unbroken containers.
- B. Storage: Protect from dampness, soiling and injury.

1.05 ENVIRONMENTAL CONDITIONS

- A. Do not install materials unless ambient temperature of 70 degrees F is maintained 24 hours prior to and during laying and until all materials have been stored at site for 24 hours at that temperature.
- B. Do not apply materials on wet or damp surfaces.
- C. Defer laying until other work that might cause damage to flooring has been completed.

1.06 EXTRA STOCK

- A. Provide two extra cartons of tile of each color for future needs of Owner. Extra to be from same batch as those actually installed.

- B. Provide one box-extra of base same as that installed and one box outside pre-formed corners.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Vinyl Composition Tile (VCT): FS SS-T-312, 1/8 inch gage, 12" x 12" x 1/8" thick size; Products, patterns and colors as scheduled.
 - 1. Fire Test: ASTM E 648, Critical Flux –0.45 Watts/ cm sq., or more, Class 1 and ASTM E 662 Smoke – 450 or less.
 - 2. Load 50 psi minimum.
 - 3. Reference Standards: Fed. Specification L-F-475A (3), Type II, Grade A and Mil STD 1623D for deck covering.
- B. Rubber base: FS SS-W-40, Type I, 4 inch high top-set rubber base to match existing; Burke, or approved equal. Colors and patterns from product as scheduled on the drawings. Provide cove base for resilient flooring. Use preformed end stops, inside corners and exterior corners.
- C. Sheet Vinyl: Membrane Flooring with Heat Welded seams: As scheduled
 - 1. Manufacturer:
 - a. Armstrong "Medintech".
 - b. Dynamit Nobel "Mipolam PVC".
 - c. Tarkett "Collage."
 - 2. Thickness: 0.080 inch, minimum.
 - 3. Pattern and Color: Selected by the Architect from manufacturer's standard range.
 - 4. Base: as scheduled
 - 5. Flooring shall be non-conductive.
- D. Adhesives, Primers and Sealers: Moisture and alkali resistant, as recommended by flooring or base manufacturer as applicable for particular material and installation condition; precede with primer recommended by flooring or base material manufacturer.

2.02 EDGING REDUCER STRIPS AND VINYL ACCESSORIES

Rubber reducer strips, color as selected, same thickness as adjacent resilient flooring material. Mercer Plastic Company, Roppe Rubber Company, Flexco Company or approved

equal.

2.03 JOINT FILLER, NEUTRAL CLEANER

Type made or recommended by floor covering manufacturer for conditions of installation.

2.04 OTHER MATERIALS

- A. All other materials, including adhesives, not specifically described but required for a complete and proper installation of resilient flooring, shall be only as recommended by the manufacturer of the material to which it is applied, and shall be subject to the approval of the Architect.

PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

- A. Examine substrate and conditions under which work is to be performed. Surfaces must be broom-clean, free of coatings that would impair adhesion, smooth and level with no more than 1/8 inch in 10 feet variation from level. Do not proceed until unsatisfactory conditions have been corrected.
- B. Beginning of installation will imply acceptance of surface by installer.

3.02 ADHESIVE APPLICATION

Follow adhesive manufacturer's directions for mixing and applying. Cover surface evenly. Do not exceed working area or time limits recommended by manufacturer.

3.03 INSTALLATION

- A. General: Install materials in strict compliance with detailed instructions issued by manufacturer of material, considering the use of "should" as indicating mandatory requirements. Work of all other trades, including painting, shall be substantially completed before start of laying flooring and permanent heating system must be in operation. Adulteration or reducing of adhesives will not be allowed. Where different colored materials occur in adjoining rooms or spaces, make color change on a line centering, under door when closed.
- B. Seamless Membrane Flooring:
 - 1. Install seamless flooring in accordance with the manufacturer's printed instructions, hot-air welding seams, and trimming.
 - 2. Install cap strip.

3. Upon completion of installation, flooring and seams shall be flat and smooth, with no voids between welds and adjacent flooring.

C. Reducer Strips”

1. Apply adhesive and bond securely to substrate in straight, true lines.
2. Provide where floor covering terminates exposing the edge of the covering.
3. Center edge strips under doors where floor covering terminates at a door opening.
4. Cut ends to fit edges of door frames and abutting surfaces; fit edges to adjoining floor coverings.
5. Top of strips shall be flush with top of resilient flooring material.

D. Resilient Base: Adhesive apply. Use extreme care not to spread adhesive above top of base. Base material shorter than 12" in length shall not be used. Scribe accurately to door trim. Do not install base until backing material is thoroughly dry. Where voids are found to exist at top of base because of wall irregularities, fill neatly flush to top of base. Install base so as to obtain full adhesion to the backing over 100% of base contact surface.

1. Apply base in accordance with base manufacturer's printed directions.
2. Set straight and level, joints closely fitted and flush, top and bottom edges in firm, full contact with floor and wall, and entire backside bonded to wall.
3. Exercise care to prevent staining of adjacent surfaces.

3.04 CLEANING AND FINISHING

- A. Remove all scraps, cartons, cans and debris from job site.
- B. Maintain traffic control until 5 days after installation.
- C. Clean all resilient flooring materials thoroughly and apply wax or finishing material in accordance with manufacturer's recommendations. Polish thoroughly. Delay cleaning and finishing until just prior to occupancy by Owner.

3.05 EXTRA STOCK

- A. Furnish three unopened boxes of floor tile from same lot as used in work. Mark boxes with manufacturer's name, color pattern and label "Surplus for Repairs".
- B. Furnish two 36" x 36" rolled swatches of each color of membrane flooring. Tag with manufacturer's name, color pattern and label "Surplus for Repairs".

END OF SECTION

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SECTION 09 90 00 - PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Extent of painting work is shown on Drawings and Schedules, and as herein specified.
- B. Paint all new surfaces, except as otherwise specified. Number of coats specified are minimum; uniform coverage is required, free from defects or blemishes.
- C. Perform all painting work in any room in which finishing work is performed, including painting new surfaces as specified.
- D. Surface preparation, priming, texture where specified and coats of paint specified are in addition to shop priming and surface treatment specified under other Sections of Work.
- E. Work includes field painting of all bare and covered pipes (where required by Mechanical Drawings), and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical and electrical work, except as otherwise indicated. All roof top mechanical units shall be painted. Exposed fireproofing shall not be painted.
- F. "Paint" as used herein means all coating systems materials, which includes primers, emulsions, enamels, stain, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.
- G. Paint all exposed surfaces whether or not colors are designated in any "schedule", except where natural finish of material is specifically noted as surface not to be painted. Where items or surfaces are not specifically mentioned, paint these same as adjacent similar materials or areas. If color or finish is not designated, Architect will select these from standard colors available for materials systems specified.
- H. Paint Existing surfaces at locations as noted on the Drawings and as required at existing areas adjacent to areas where new work is to be performed but not scheduled on the Drawings. Take new paint back to a point where the transition between new paint and existing paint will be the least noticeable.

1.02 RELATED WORK

- A. Division 5: Priming of miscellaneous metals.

PAINTING
2019

SEPTEMBER

- B. Section 07 60 00: Priming of unexposed portions of sheet metal.
- C. Section 09 25 00: Taping and preparation of gypsum wallboard.
- D. Section 09 25 00: Spray texturing of Walls and Ceilings to match existing.

1.03 PAINTING NOT INCLUDED

Following categories of work are not included as part of field-applied finish work, or are included in other Sections of these Specifications:

- A. Shop priming: Unless otherwise specified, shop priming of ferrous metal items is included under various Sections for structural steel, miscellaneous metal items, hollow metal work, and similar items, and for such fabricated components as architectural woodwork, wood casework, and shop-fabricated or factory-built mechanical and electrical equipment or accessories.
- B. Pre-finished items: Unless otherwise indicated, do not include painting when factory-finishing or installer- finishing is specified for such items as (but not limited to) toilet enclosures, finish hardware, plastic covering, ceramic tile, drapery and track, finished mechanical and electrical equipment including light fixtures and distribution cabinets, and equipment.
- C. Concealed surfaces: Unless otherwise indicated, painting is not required on wall or ceiling surfaces in concealed areas and generally inaccessible areas, such as foundation spaces, furred areas, pipe spaces and duct shafts.
- D. Finished metal surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
- E. Operating parts and labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting unless otherwise indicated.
- F. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.04 QUALITY ASSURANCE

PAINTING
2019

SEPTEMBER

Paint coordination: Provide finish coats which are compatible with prime paints used. Review other Sections of these Specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other subcontractors, furnish information on characteristics of finish materials proposed for use, to ensure that compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify Architect in writing of any anticipated problems using coating systems as specified with substrates primed by others.

1.05 SUBMITTALS

- A. Refer to Section 01 30 00 - SUBMITTALS.
- B. Manufacturer's data: Submit manufacturer's technical information, including paint label analysis and application instructions for each material proposed for use.
 - 1. List each material and cross-reference to specific paint and finish system and application. Identify by manufacturer's catalog number and general classification.
- C. Samples: Submit samples for Architect's review and selection of color and texture only. Compliance with all other requirements is exclusive responsibility of Contractor. Provide listing of material and application for each coat of each finish sample.
 - 1. On 8 x 12 inch cardboard, provide two samples of each color and material, with texture to simulate actual conditions. Resubmit each sample as requested until acceptable sheen, color, and texture is achieved.

1.06 DELIVERY AND STORAGE

- A. Deliver all materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following information.
 - 1. Name or title of material.
 - 2. Manufacturer's stock number and date of manufacture.
 - 3. Manufacturer's name.
 - 4. Contents by volume, for major pigment and vehicle constituents.
 - 5. Thinning instructions.

PAINTING
2019

SEPTEMBER

6. Application instructions.
7. Color name and number.

1.07 JOB CONDITIONS

- A. Apply water-base paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees F and 90 degrees F unless otherwise permitted by paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees F and 95 degrees F, unless otherwise permitted by paint manufacturer's printed instructions.
- C. Do not apply paint in rain, fog, or mist; or when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.
- D. Painting may be continued during inclement weather only if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.01 MATERIAL QUALITY

- A. Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as standard, best-grade product will not be acceptable. As a standard of quality and performance, conform to existing building standard
- B. Manufacturers offering products to comply with requirements include following:
 1. Sherwin Williams
 2. Dunn-Edwards
 3. Kelly Moore
- C. Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only to recommended limits. Undercoat, topping coats and/or sealer shall be of type required and recommended by paint manufacturer to insure that gypsum board taping and paper surfaces will

not telegraph varying textures, sheens, or irregular appearances.

- D. Provide paints of durable and washable quality. Use paint materials which will withstand normal washing as required to remove pencil marks, ink, ordinary soil, etc., without showing discoloration, loss of gloss, staining, or other damage.

2.02 COLORS AND FINISHES

- A. Use representative colors when preparing samples for Architect's review.
- B. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.
- C. Color pigments: Pure, non-fading, applicable types to suit substrates and service indicated.
- D. Exterior painting, none anticipated.
- E. Interior painting, except as indicated, will be limited to 5 colors, combined in one area.

2.03 EXTERIOR PAINT SYSTEMS SCHEDULE

- A. Metal doors and frames and mechanical units:
 - 1st Coat: Preventative Acrylic Primer
 - 2nd Coat: Acrylic Semi-Gloss Paint
 - 3rd Coat: Acrylic Semi-Gloss Paint
- B. Galvanized metal:
 - 1st Coat: Rust-Preventative Acrylic Primer
 - 2nd Coat: Acrylic Semi-Gloss Paint
 - 3rd Coat: Rust-Preventative Acrylic Semi-Gloss Paint
- C. Steel fabrications:
 - 1st Coat: Rust-Preventative Acrylic Primer
 - 2nd Coat: Acrylic Semi-Gloss Paint
 - 3rd Coat: Acrylic Semi-Gloss Paint
- D. Aluminum:

PAINTING
2019

SEPTEMBER

1st Coat: Rust-Preventative Acrylic Primer
2nd Coat: Acrylic Semi-Gloss Paint
3rd Coat: Acrylic Semi-Gloss Paint

E. Cement Plaster:

1st Coat: Acrylic Primer/Sealer
2nd Coat: Exterior Acrylic Flat Paint
3rd Coat: Exterior Acrylic Flat Paint

2.04 INTERIOR PAINT SYSTEMS SCHEDULE

A. Metal electric panels, etc.:

1st Coat: Primer to suit
2nd Coat: Semi-gloss acrylic latex enamel
3rd Coat: Semi-gloss acrylic latex enamel, additional coats as required to cover

B. Wood trims and doors (paint finish):

1st Coat: Wood primer
2nd Coat: Semi-gloss acrylic latex enamel
3rd Coat: Semi-gloss acrylic latex enamel, additional coats as required to cover

D. Gypsum Board (Typical):

Top Coat: As required/recommended to taped and topped gypsum board surfaces.

Spray texture as Schedule. Furnish under section 09250.

1st Coat: Synthetic resin emulsion primer sealer
2nd Coat: Semi-gloss acrylic latex enamel
3rd Coat: Semi-gloss acrylic latex enamel, additional coats as required to cover.

D. Gypsum Board (Service spaces, electrical rooms: walls/ceilings):

PAINTING
2019

SEPTEMBER

Top Coat: As required/recommended to taped and topped gypsum board surfaces.

1st Coat: Primer

2nd Coat: Flat acrylic latex

3rd Coat: Flat acrylic latex as required to cover

E. Gypsum/Smooth Surfaces not referenced elsewhere:

Top Coat: As required/recommended to taped and topped smooth gypsum wallboard surfaces

1st Coat: Primer (per manufacturer's recommendation)

2nd Coat: (Smooth Finish) Semi-gloss acrylic latex enamel

3rd Coat: (Smooth Finish) Semi-gloss acrylic latex enamel, additional coats as required to cover

PART 3 - EXECUTION

3.01 INSPECTION

- A. Applicator must examine areas and conditions under which painting work is to be performed and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to applicator.
- B. Starting of painting work will be construed as applicator's acceptance of surfaces within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of durable paint film.

3.02 SURFACE PREPARATION

- A. General:
 - 1. Perform all preparation and cleaning procedures in strict accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.
 - 2. Remove all hardware, hardware accessories, machined surfaces, plates,

lighting fixtures, and similar items in place and not to be finish painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, is necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items by workmen skilled in trades involved.

3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease with clean cloths and cleaning solvents prior to mechanical cleaning. Program cleaning and painting so that dust and other contaminants from cleaning process will not fall in wet, newly painted surfaces.
4. Provide sealers, top coats or other surface preparation to taped and topped gypsum board surfaces as required and as recommended by paint and gypsum wall board manufactures to eliminate all telegraphing of paper surface textures through the painted finishes.

B. Cementitious materials:

1. Prepare cementitious surfaces of concrete and cement plaster to be painted by removing all efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.
2. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint.
3. Do not paint over surfaces where moisture content exceeds 8%, unless otherwise permitted in manufacturer's printed directions.

C. Ferrous metals: Clean non-galvanized, ferrous surfaces that have not been shop-coated of all oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning, complying with Steel Structures Painting Council (SSPC)-SP3.

D. Galvanized surfaces: Clean free of oil and surface contaminates with acceptable non-petroleum based solvent. Etch with a zinc-acid phosphate solution.

3.03 MATERIALS PREPARATION

- A. Mix and prepare painting materials in strict accordance with manufacturer's directions.

PAINTING
2019

SEPTEMBER

- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in clean condition, free of foreign materials and residue.
- C. Stir all materials before application to produce mixture of uniform density, and as required during application of materials. Do not stir any film which may form on surface into material. Remove film and, if necessary, strain material before using.

3.04 APPLICATION

A. General:

1. Apply paint by brush, roller, spray, or other acceptable practice in accordance with manufacturer's directions. Use brushes best suited for type of material being applied. Use rollers of carpet, velvet back, or high pile sheeps wool as recommended by paint manufacturer for material and texture required.
 2. Number of coats and paint film thickness required is same regardless of application method. Do not apply succeeding coats until previous coat has completely dried. Sand between each enamel or varnish coat application with fine sandpaper or rub surfaces with pumice stone where required to produce even, smooth surface in accordance with manufacturer's directions.
 3. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive film thickness equivalent to that of flat surfaces.
 4. Finish exterior doors on tops, bottoms, and side edges same as exterior faces, unless otherwise indicated.
 5. Omit first coat (primer) on metal surfaces which have been shop primed and touch-up painted, unless otherwise indicated.
- B. Minimum coating thickness: Apply each material at not less than manufacturer's recommended spreading rate, to provide total dry film thickness as indicated. Dry film thickness of vinyl wash pretreatment shall be 0.3 to 0.5 mils maximum.
 - C. Scheduling painting: Apply first-coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for painting as soon as practicable after

preparation and before subsequent surface deterioration. Surfaces shall be prime coated within 12 hours of application of vinyl wash pretreatment.

Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of undercoat.

- D. Prime coats: Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure finish coat with no burn-through or other defects due to insufficient sealing.
- E. Brush application: Brush-out and work all brush coats onto surfaces in even film. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable. Neatly draw all glass and color break lines. Brush apply all primer or first coats, unless otherwise permitted to use mechanical applicators.
- F. Mechanical applicators: Use mechanical methods for paint application when permitted by governing ordinances and trade union regulations. If permitted, limit to only those surfaces impracticable for brush applications.
- G. Complete Work: Match approved samples for color, texture and coverage. Remove, refinish, or repaint Work not in compliance with specified requirements.

3.05 PROTECTION

- A. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Leave all such work undamaged. Correct any damages by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
- B. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

3.06 CLEAN-UP

- A. During progress of work, remove from site all discarded paint materials, rubbish, cans and rags at end of each work day.
- B. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using

PAINTING
2019

SEPTEMBER

care not to scratch or otherwise damage finished surfaces.

- C. At completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION

SECTION 10 05 00 – MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.01 SCOPE

- A. Provide and install specialty and built-in items as indicated on the Drawings and specified here.
- B. Provide miscellaneous and incidental items under the work of this Section for all items indicated on the Drawings but not specifically addressed in other Sections or not necessarily scheduled herein.

1.02 RELATED WORK

- A. **Section 06 40 00: Architectural Casework.**
- B. Section 07 60 00: Sheet Metal Work.
- C. Section 09 90 00: Painting.

1.03 STANDARDS

- A. Individual items or assemblies scheduled or as indicated on the Drawings shall conform to respective industry and governmental standards.
- B. CBC, California Building Code.

1.04 QUALITY ASSURANCE:

Installation of items or assemblies shall be by personnel thoroughly trained and experienced in the required skills and completely familiar with respective manufacturer's methods of installation.

1.05 SUBMITTALS

Before any specialty items are delivered to the job site, submit Shop Drawings and catalog cuts in accordance with Section 01040. Show all details of installation and assembly, all requirements for work by other trades, and all colors available from the selected manufacturer in the quality specified.

1.06 DELIVERY, STORAGE AND HANDLING

Deliver undamaged products or materials to site in manufacturer's sealed containers or

wrappings with legends intact. Store on site secure from weather, soil and physical damage.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All items or assemblies shall be as scheduled in **Article 3.05** of this Section, or approve the equal items as set forth in Section **01 63 00** covering submission and review of proper substitutions.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Coordinate with other trades as required to ensure proper and adequate provision in framing and wall finish for the installation of the selected specialties in the correct locations.
- B. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.
- E. Upon completion of installation, and as a condition of acceptance, visually inspect the entire work of this Section, adjust all components for proper alignment and use, and touch up all abrasions and scratches to make them completely invisible.

3.02 INSTALLATION

Install all specialty items where indicated on the Drawings and in full accordance with all pertinent regulations and the manufacturer's recommendations, anchoring all components firmly in place for long life under hard use.

3.03 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the City.

3.04 CLEAN UP

Keep building and premises free from accumulated waste materials, rubbish and debris resulting from Work herein. Upon completion of work, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from installation, and legally dispose of off site.

3.05 SCHEDULE

END OF SECTION

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SECTION 10 40 00 - IDENTIFYING DEVICES

1 - GENERAL

1.01 SCOPE

- A. Furnish and install toilet room signs, directional handicap and informational signs, site signage and special signage as shown on the Drawings and specified here.

1.02 RELATED WORK

- A. Pavement Stripping: Section 02 58 00.
- B. Finish Hardware: Section 08 70 00.
- C. Flush Wood Doors: Section 08 20 00.
- D. Gypsum Wallboard: Section 09 25 00.

1.03 QUALITY ASSURANCE

- A. Catalog Standards:
 - 1. Manufacturer's catalog numbers may be indicated on Drawings for convenience in identifying specified items. Unless modified by notation on Drawings or specified, catalog description for indicated number constitutes requirements for the item specified.
 - 2. The use of catalog numbers and specific requirements set forth in Drawings and Specifications does not preclude use of any other manufacturer's products or procedures which may be equivalent. Such numbers and requirements establish standards of design and quality for materials, construction and workmanship.
- B. CBC, California Building Code 2016 Edition
- C. Signage shall be in conformance with the Americans with Disabilities Act (ADA).

1.04 SUBMITTALS

- A. Refer to Section 01 33 00 for submitting the following items:
 - 1. Product Data. Submittal required.
 - 2. Installation Instructions and Drawings. Submittal required.

3. Shop Drawings. Submittal required.
4. Samples for color review. 2 Frame Samples. 2 Plaque Samples.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends intact. Store on site secure from weather, soil and physical damage.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide signage and graphics of a style and quality provided by ASI Sign Systems, Inc., SP Series, Style SPE Andco Industries Corp., PME 1000 Series or approved equal plaque sign system.
- B. Exterior metal site signage shall be as manufactured by Emed Company, Inc., National Marker Co., or approved equal

2.02 INTERIOR SIGNAGE

- A. Sign Type 1:
 1. Transparent .080 inch thick, semi-matte acrylic plastic plaque.
 2. Sign Size: 8" (20cm) high x 6" (15cm) wide x 1/8" (3.2mm) thick.
 3. Letter shall be reverse side screen printed. Color: White. Style: Helvetica Medium, Upper and Lower Case.
 4. Colored subsurface background. Color as selected by the Architect. Thickness: .080 inches.
 5. Universal Symbols figures and letter text and locations shall be as scheduled and indicated on the Drawings. Letter size: 3/4" high (1.9cm).
 6. Mounting heights shall be a scheduled and indicated on the Drawings.
 7. Braille text strip.
 8. Furnish for:
 - Men
 - Women
 - Unisex
- B. Sign Type 2:
 1. Provide restroom handicapped signs of transparent 1/4" (6.2mm) thick semi-matte acrylic plastic plate with raised Universal Handicapped Symbol, 2-

IDENTIFYING DEVICES

SEPTEMBER 2019

1/2" (6.4cm) high, in center of 12" (30cm) diameter circle for women and 12" (30cm) equilateral triangle for men.

a. Signs shall be in accordance with CBC, Section 220.11 and ADA.

2. Base plate subsurface background color to be as selected by the Architect with Universal Symbol subsurface background color to be as selected by the Architect.
3. Locations and mounting shall be as scheduled and indicated on the Drawings.
4. Braille text strips stating "MEN" and "WOMEN".

C. Sign Type 3:

1. Provide unisex restroom handicapped signs of transparent 1/4" (6.2mm) thick semi-matte acrylic plastic plate with raised Universal Handicapped Symbol, 2-1/2" (6.4cm) high, in center of 12" or to suit (30cm) diameter circle for women and superimposed 12" (30cm) equilateral triangle for men.

a. Signs shall be in accordance with CBC, Section 220.11 and ADA.

2. Base plate subsurface background color to be as selected by the Architect with Universal Symbol subsurface background color to be as selected by the Architect.
3. Locations and mounting shall be as scheduled and indicated on the Drawings.
4. Braille text strip stating "MEN AND WOMEN".

2.03 EXTERIOR SITE SIGNAGE

- A. Porcelain Enameled Steel Signs: Provide accessible parking stall and traffic control signs as detailed and indicated on Drawings.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.

IDENTIFYING DEVICES

SEPTEMBER 2019

- C. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 INSTALLATION OF IDENTIFYING DEVICES

- A. Install identifying devices in accordance with accepted Shop Drawings.
- B. Attach signs with appropriate adhesive as recommended by manufacturer, to be compatible and appropriate for the wall surfaces. Place as indicated and in accordance with accepted shop drawings.
 - 1. Use extreme caution in placing adhesive on backs of signs so that adhesive will not be visible at edges of signs.

C. Signage Mounting:

- 1. Refer to Article 2.02 for the appropriate signage type.
- 2. Locations of all signs must be approved by the Architect prior to installation.
- 3. Confirm to CBC, Section 1117 B.5.

3.03 ADJUSTING AND CLEANING

- A. Remove all dust, dirt, finger marks, etc. from signs and letters, as recommended by manufacturer.
- B. Keep building and premises free from accumulated waste materials, rubbish and debris resulting from work herein. Upon completion, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said work, and legally dispose of offsite.

3.04 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of all other trades.
- B. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.

-END OF SECTION-

SECTION 10 80 00 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 RELATED WORK

- A. Section 06100: Wood backing and blocking.
- B. Section 09300: Tile.

1.02 SUBMITTALS

- A. Refer to Section **01 30 00**.
- B. Manufacturer's data: Submit manufacturer's data on each item furnished including complete instructions for installation. Adhesive installation not permitted.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Mirrors w/shelves: Bobrick B-292 Series, Bradley 781, or approved equal, complete with stainless steel or satin chrome, angle framed with edge trim, shelf, and with galvanized steel hanger assemblies. All corners shall be square. Mirrors shall have zinc-coated steel backing and protective coating. 18"x30" centered over Lavatory sinks as indicated on Drawings at each toilet room.
- B. Toilet Tissue Dispenser: Bobrick B-288, Bradley 5402, or approved equal. Surface mounted, multi-roll tissue dispenser. Type 304 stainless steel, satin finish, slope top. Provide at each toilet room at locations as noted.
- C. Grab Bars: Bobrick Series B-6206, Bradley 883, or approved equal; 18 gage, 1-1/2 inches O.D. Type 304 stainless steel welded to 13 gage Type 304 solid stainless steel concealed wall mounting plates. Intermediate supports similar. All joints ground and polished. Concealing flange shall be 3 inches od. Type 304 stainless steel, 1/2" deep 11 gage. Satin finish on all exposed surfaces. Provide as shown.
- D. Toilet Seat Cover Dispensers: Bobrick B-221, Bradley 583, or approved equal; heavy gage type 304 stainless steel, satin finish; surface mounted; 250 seat cover capacity. Provide one for each water closet.
- E. Sanitary Napkin Disposal Unit: Bobrick B-254, Bradley 4722-15, or approved equal, surface mount; 22 gage, type 304 stainless steel, satin finish; seamless flanges and self-closing doors. Provide at locations as noted.

TOILET ACCESSORIES

SEPTEMBER 2019

- J. Paper Towel Dispenser/Waste Drop: Bobrick B-3900, Bradley 235, or approved equal; recessed, stainless steel satin finish; removable stainless steel waste container; dispenses 600 C-fold or 800 multi-fold or 1100 single fold paper towels. Provide at each toilet room and locations scheduled.
- K. Liquid Soap Dispensers (LSD2): Bobrick B-2111, Bradley 6562, or approved equal, wall mounted, surface 40 fluid ounce stainless steel cover. Provide at locations as indicated on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install where shown or as specified.
- B. Use concealed vandal-proof fastenings wherever possible. Provide anchors, bolts and other necessary fasteners, and attach accessories securely to walls or toilet partitions as recommended by manufacturer for each item and each type of substrate condition.

-END OF SECTION-

SECTION 11 12 00 - UNIT APPLIANCES

PART 1 - GENERAL

1.01 SCOPE

- A. Provide complete and functioning appliances as indicated on the Drawings and specified here.

1.02 RELATED WORK

- A. Electrical Work. Refer to the Drawings.
- B. Mechanical Work. Refer to the Drawings.

1.03 QUALITY ASSURANCE

- A. The approved manufacturer's recommended installation procedures will become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.
- B. Catalog Standards:
 - 1. Manufacturer's catalog numbers may be shown on Drawings for convenience in identifying specified items. Unless modified by notation on Drawings or specified, catalog description for indicated number constitutes requirements for the item specified.
 - 2. The use of catalog numbers and specified requirements set forth in Drawings and Specifications does not preclude use of any other manufacturer's products or procedures which may be equivalent. Such numbers and requirements establish standards of design and quality for materials, construction, and workmanship.
- C. Furnish all unit appliances, related components, accessories and all allied products new and free from defects.

1.04 SUBMITTALS

- A. Refer to Section **01 30 00** for submitting the following:
 - 1. Product Data. Submittal required.
 - 2. Installation instructions. Submittal required.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends intact. Store on site secure from weather, soil and physical damage.
- B. Transport, handle and store in strict accordance with the manufacturer's recommendations.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Range Exhaust Hood: Shall be General Electric Model JVX5305DJWW or equivalent by Kenmore, Hotpoint or approved equal with the following minimum characteristics and options:
 - 1. Control Location: Front
 - 2. Control Type: Rocker Switch
 - 3. Cooktop Lighting: Dual LED
 - 4. Ducting Vertical or Horizontal: 7" Round
 - 5. Exhaust Options **Recirculating**; Vented to Outside
 - 6. Fan Speed Control: 2-Speed
 - 7. Filter Cleaning: Dishwasher Safe
 - 8. Light Controls: On/Off
 - 9. Removable Grease Filter(s): Yes
 - 10. CFM/ Sones Rating: 100/1.5 (Low Speed); 270/4.5 (High Speed)
 - 11. **Accessory: JXCF55 - Charcoal Filter**
 - 12. Accessory: JXHC1 Power Cord Kit
 - 13. Color: White
- B. Dishwasher Built-In: Shall be General Electric Model GDF645SGNWW equivalent by Kenmore, Hotpoint or approved equal with the following minimum characteristics and options.
 - 1. Style: Built-In Front Control
 - 2. Tub and Door Liner: Stainless Steel
 - 3. Tub Type Tall Tub
 - 4. Control Type 8 Touchpads; Cap Touch Controls;
 - 5. Front Controls:
 - 6. Dishwasher Control Features:
 - a. 3 Digit Countdown Display with
 - b. 1 "Clean" light
 - c. 1 "Sanitized" light
 - d. Cycle Progress Indicators; Audible

- e. End-of-Cycle Signal; Control Lock;
 - f. Last Cycle Memory; Start/Reset Pad
 - g. Wash System: 3-Level
 7. Wash System Features:
 - a. Automatic Hot Start
 - b. Automatic Temperature Control
 - c. Bottle Jets (4)
 - d. Drain Pump;
 - e. Dual Pumps and Motors
 8. Piranha™ Hard Food
 9. Disposer with removable filter
 10. Sensor: Clean Sensor
 11. Wash Arms: 3 Wash Levels; Lower; Middle; Upper
 12. Water Filtration System 100% Filtration with Piranha Hard
 13. Food Disposer and Removable Filter
 14. Dispenser Rinse Aid with Indicator and Adjustment
 15. Number of Cycles 5
 - a. Dishwasher Cycles
 - 1) 1 Hour Wash
 - 2) Auto Sense
 - 3) Heavy Wash
 - 4) Light Wash
 - 5) Normal Wash
 16. Exterior Style: Standard
 17. General Features:
 - a. Perma Tuf interior finish.
 - b. 10 year tub warranty.
 - d. Expanded upper rack.
 - e. Posi-trac roller system.
 - f. Self-clean filter system.
 - g. Rinse aid dispenser.
 - h. Soft food disposer.
 - i. Convection drying.
 - j. Sound insulated drum and motor compartment.
 - k. Average rating (120V/60 Hertz): 12.5.
 - l. Horizontal mechanism.
 - m. Leveling screws.
 - n. Tub side trim
 18. Color: White
- C. Disposal shall be Model GFC525N by General Electric or equivalent by Kenmore, Hotpoint or approved equal with the following features:

UNIT APPLIANCES

SEPTEMBER 2019

1. Motor Horsepower: ½ hp
 2. Control: Wall Switch
 3. Feed Type: Continuous
 4. Impellers: Dual Swivel
 5. Armature Shaft Material: Cold-rolled Carbon Steel
 6. Features: 2 level Precutter
 7. Grinding Wheel Material: Galvanized Steel
 8. Grinding Speed (RPM): 2600 RPM's
 9. Turntable Material: Galvanized Steel
 10. Volts/hertz/Amps: 120 V; 60 Hz; 4.5 Amps
- D. Refrigerator with Freezer shall be Model GIE21GTHWW by General Electric or equivalent by Kenmore or approved equal with the following features:
1. Temperature Management Features Air: Tower in Freezer
 2. Defrost Type: Frost Free
 3. Control Type: Upfront Temperature Controls
 4. Icemaker: Factory-Installed
 5. Fresh Food Cabinet Shelves:
 - a. 2 Adjustable
 - b. 2 Full-Width;
 - c. 2 Total – Glass
 - d. Spill-Resistant
 6. Fresh Food Door Bins 2 with Gallon Storage; 3 Total
 7. Fresh Food Cabinet Drawers 1 Snack Drawer; 2 Adjustable
 8. Humidity Drawers; 3 Total Clear
 9. Fresh Food Door Features:
 - a. Dairy Compartment
 - b. Gallon Storage
 10. Freezer Cabinet Shelves:
 - a. 1 Adjustable
 - b. 1 Full-Width
 - c. 1 Total
 11. Freezer Door Bins:
 - a. 2 Full-Width
 - b. 2 Total
 - c. Fixed
 12. Freezer Features: Spill-proof Freezer Floor
 13. Exterior Style Free-Standing
 14. Leveling System Leveling Legs
 15. Performance Features:
 - a. Easily Removable Door Gaskets
 - b. Never Clean Condenser
 16. Product Type: Top Freezer Refrigerator
 17. Approximate Dimensions: 32 7/8 inches wide x 34 inches deep x 66 3/4

- inches high.
18. Energy Star qualified with Auto Energy Saver
 19. Electrical requirements - 120 Volts, 60 Hertz, 15 Amps.
 20. 21.1 cubic feet capacity.
 21. Color: White
- E. Electric Range shall be Model JBS460DMWW by General Electric or equivalent by Kenmore, Hotpoint or approved equal with the following features:
1. Configuration Range with Storage Drawer
 2. Cooktop Burner Type: Coil
 3. Cooktop Surface One-Piece Upswept; Porcelain-Enamel
 4. Control Location: Front
 5. Elements:
 - a. Left Front 6" 1250W Temp Limiting Coil
 - b. Left Rear 8" 2400W Temp Limiting Coil
 - c. Right Front 8" 2400W Temp Limiting Coil
 - d. Right Rear 6" 1250W Temp Limiting Coil
 8. Removable One-Piece Drip Bowls Chrome
 9. Product Type: Free-Standing Single Oven
 10. Heating Element "ON" Indicator Light
 11. Lift-Up Cooktop With Support Rods
 12. Cleaning Type: Standard Clean
 13. Oven Control Features Oven "ON" Light
 14. Oven Features
 - a. 4-Pass Bake Element
 - b. 4-Pass Broil Element
 15. Oven Rack Features:
 - a. 2 Oven Racks
 - b. 6 Rack Positions
 16. Storage Drawer Features Removable Full-Width
 17. Cooking Technology Traditional
 18. Drawer Type Storage
 19. Fuel Type: Electric
 20. Oven Interior 1 Incandescent
 21. Approximate Dimensions: 47 in x 28 3/4 in x 30 in
 22. Power Ratings:
 - a. Amp Rating at 208V:40
 - b. Amp Rating at 240V: 40
 - c. Bake Wattage: 2585W
 - d. Broiler Wattage: 3410W
 - e. KW Rating at 208V: 7.9
 - f. HW Rating at 208V: 10.5
 23. UL858 Household Electric Ranges Standard for Safety
 24. Color: White

- F. Countertop Microwave shall be Model PES7227DLWW by General Electric or equivalent by Kenmore, Hotpoint or approved equal with the following features:
1. Control Type Electronic Touch
 2. Cooking Technology Microwave
 3. Electronic Digital Display with Clock (LED)
 4. Instant On Controls
 5. Microwave Watts (IEC-705) 1100.00 W
 6. Power Levels: 10
 7. Sound Volume Control (On/Off)
 8. Timer (On/Off)
 9. Turntable Glass Recessed
 10. Turntable Size: 16.50 in
 11. Microwave Sensor Cooking Controls
 - a. Defrost
 - b. Weight/Time
 - c. Healthy Menu
 - d. Melt/Soften
 - e. Popcorn
 - f. Potato
 - g. Reheat
 - h. Vegetable
 12. Control Features:
 - a. Add 30 Seconds
 - b. Cancel/Off
 - c. Clock
 - d. Saver
 - e. Cook Time
 - f. Help
 - g. Power Level
 - h. Set Clock
 - i. Sound
 - j. Start/Pause
 - k. Timer On/Off
 13. Product Type: Countertop Microwave
 14. Microwave Oven Interior Epoxy Coated
 15. Power Cord Length: 41"
 16. Color: White

2.02 ACCESSORIES:

1. Provide all accessories for installation and connection to power.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to installation, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 INSTALLATION

- A. Install all unit appliance in strict compliance with original design, manufacturer's recommendations, and reviewed Shop Drawings.
- B. Coordinate work of other trades required for the timely and proper installation of the work and materials of this Section.

3.03 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

-END OF SECTION-

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SECTION 14 41 50 - WHEELCHAIR LIFT

PART 1 - GENERAL

1.01 SCOPE

- A. Provide complete and functioning wheelchair lift as indicated on the Drawings and specified here.

1.02 RELATED WORK

- A. Electrical Work: Refer to the Drawings.

1.03 QUALITY ASSURANCE

- A. The approved manufacturer's recommended installation procedures will become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.

- B. Catalog Standards:

1. Manufacturer's catalog numbers may be shown on Drawings for convenience in identifying specified items. Unless modified by notation on Drawings or specified, catalog description for indicated number constitutes requirements for the item specified.
2. The use of catalog numbers and specified requirements set forth in Drawings and Specifications does not preclude use of any other manufacturer's products or procedures which may be equivalent. Such numbers and requirements establish standards of design and quality for materials, construction, and workmanship.

- C. Furnish all wheelchair lift, related components, accessories and all allied products new and free from defects.

1.04 STANDARDS:

- A. Wheelchair lift equipment shall be in accordance with the 2016 CBC, California Building Code.
- B. All electrical components shall be UL labeled for its intended purpose.
- C. Wheelchair lift equipment shall conform to ANSI A17.1 design requirements.

1.05 SUBMITTALS

- A. Refer to Section 01 30 00 for submitting the following:
 - 1. Product Data. Submittal required.
 - 2. Installation instructions. Submittal required.
 - 3. Shop Drawings: Indicate types, materials, layouts, configurations, hardware, fasteners, operators and shop finishes upon Architect's request only.
 - 4. Color samples for color selection.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends intact. Store on site secure from weather, soil and physical damage.
- B. Transport, handle and store in strict accordance with the manufacturer's recommendations.

1.07 PROJECT CONDITIONS:

- A. Products shall be available at project when required for installation so as not to delay job progress. Installer for these products shall cooperate with installers performing work under other Sections involved to effect proper installation.

1.08 WARRANTY:

- A. The product manufacturer shall guarantee the wheelchair lift for one (1) year with an extended two (2) year warranty on the drive train.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS AND MODELS:

- A. Freedom Lift Systems Model APFLC400P Easy Ride Portable Wheelchair Lift (specified).
- B. Equivalent by America Stair-Glide Corporation;
- C. Or approved equal.

2.02 MATERIALS:

- A. Wheelchair lift equipment shall conform to CBC, Title 24, Section 5107, and have the following minimum operational characteristics:
1. Rated Load: 750 lb (340 kg) Heavy duty, Commercial grade
 2. Drive: Belt driven Ball screw; 90V DC
 3. 1/3 hp Motor with Brake
 4. Optional 24V DC battery powered unit
 5. Lifting Height: 53" (20.3 cm)
 6. Convenience: 4 Caster Wheels, Automatic Folding Ramp
 7. Power: 120V AC 15A Grounded Circuit (240V AC Optional)
 8. Control Circuit: 24V AC (Low Voltage Controls)
 9. Standard Platform: 36" x 54" (91.4 x 137.2 cm) Platform with
 10. 42" (106.7 cm) High Guard Panels
 11. Speed: Estimated Average 10 fpm (0.5 m/s)
 12. Safety Features:
 - a. Constant Pressure Paddles with E-stop
 - b. Platform Gate on Exit Side
- C. Colors shall be as selected by the Architect from the manufacturer's full range of available colors. There shall be no additional costs to the Owner for selection of colors other than white.

2.03 MISCELLANEOUS ITEMS:

- A. Provide all miscellaneous fasteners, brackets, supports, connectors and accessory items as indicated on the Drawings or as required by the product manufacturer for a complete and proper installation of the materials, products or systems specified in this Section.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Prior to installation of the work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Contractor. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 INSTALLATION:

- A. Wheelchair lift equipment in strict compliance with original design, manufacturer's recommendations, and reviewed Shop Drawings.

3.03 PROTECTION:

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- C. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

3.04 ADJUSTING AND CLEANING:

- A. Adjust all rollers, tracks, operators or other moving parts to operate smoothly and without binding or jamming.
- B. Upon completion of installation, remove manufacturer's temporary labels, marks of identification. Thoroughly wash surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable condition. Replace damaged parts and surfaces which are not free from imperfections.
- C. Touch up damaged areas in shop primed surfaces which will be concealed after erection. Leave in condition fit for finish painting by other trades. Repair or replace defective materials as directed. Lubricate hardware and leave entire installation clean and in good operation condition.

3.05 OPERATING AND MAINTENANCE INSTRUCTIONS:

- A. Upon completion of installation and as a condition of its acceptance, instruct Owner's personnel as Owner directs in the operation and maintenance of all wheelchair lift equipment.

-END OF SECTION-