



**COUNTY OF
SAN MATEO**

**CONTRACT DOCUMENTS
AND
PROJECT SPECIFICATIONS
FOR**

**San Mateo Medical Center
SMMC Prevent Self Harm & Ligature Project
222 W. 39th Avenue
San Mateo, CA 94403**

**OSPHD No. S191567-41-00
County Project No. P30F1**

Architect
SMITH-KARNG ARCHITECTURE, Inc.
800 Haight Street
San Francisco, CA 94117
SKA Project No.: 1912

Issued: November 04, 2020



SAN MATEO COUNTY HEALTH
**SAN MATEO
MEDICAL CENTER**

00 01 03

PROJECT DIRECTORY

Project Name: San Mateo Medical Center (SMMC)
SMMC Prevent Self Harm & Ligature Project

Owner: County of San Mateo
Department of Public Works

Owner/SMMC's Representative: **Bernadette Delgado, Capital Project Manager**
Capital Projects & Construction Services Facilities and
Capital Project Division
County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
Tel: (650) 400-6951
E-mail: bdelgado@smcgov.org

All bidding inquiries shall be directed only to:

Bernadette Delgado, Capital Project Manager
Capital Projects & Construction Services Facilities and
Capital Project Division
County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
Tel: (650) 400-6951
E-mail: bdelgado@smcgov.org

Design Professionals: **Smith-Karng Architecture, Inc.**
Architect
800 Haight Street
San Francisco, CA 94117
Tel: (415) 552-3600
Fax: (415) 552-1910
Attn: Madelyn McClellan

E-Structure
Structural
1144 65th Street, Suite A
Oakland, CA 94608
Tel: (510) 982-5010
Fax: (510) 235-3992
Attn: Maryann Phipps

Cammisa + WIPF
Mechanical & Plumbing
642 Harrison Street, 4th Floor
San Francisco, CA 94107
Tel: (415) 563-5740
Attn: Angelo Dominguez

Ortega Consulting Engineers

Electrical
5 Third Street, Suite 1220
San Francisco, CA 94103
Tel: (415) 546-0490
Fax: (415) 546-0421
Attn: Arsenio Ortega

Address for Stop Notices:

Bernadette Delgado, Capital Project Manager
Capital Projects & Construction Services Facilities and
Capital Project Division
County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
Tel: (650) 400-6951
E-mail: bdelgado@smcgov.org

Address for Demand for Arbitration:

Bernadette Delgado, Capital Project Manager
Capital Projects & Construction Services Facilities and
Capital Project Division
County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
Tel: (650) 400-6951
E-mail: bdelgado@smcgov.org

A copy of the Demand for Arbitration
must be sent to:

County of San Mateo
Department of Public Works
Attn: Owner's Responsible Administrator
(See Agreement for Name of Responsible Admin.)
County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063

END OF SECTION 00 01 03

00 01 10 TABLE OF CONTENTS

DIVISION 00 – CONSTRUCTION BIDDING REQUIREMENTS

00 01 03	PROJECT DIRECTORY
00 01 10	TABLE OF CONTENTS
00 01 15	LIST OF DRAWINGS SHEETS
00 11 09	BIDDING CALENDAR
00 11 16	NOTICE TO CONTRACTORS
00 21 13	INSTRUCTIONS TO BIDDERS
00 41 13	BID FORM STIPULATED SUM SINGLE-PRIME CONTRACT & DESIGNATED SUBCONTRACTOR LIST
00 45 19	NON-COLLUSION DECLARATION
00 45 26	WORKERS COMPENSATION CERTIFICATION
00 45 29	JURY SERVICE ORDINANCE & WAGE COMPENSATION
00 45 36.01	EQUAL EMPLOYMENT OPPORTUNITY REQUIERMENTS CERTIFICATE OF COMPLIANCE
00 45 36.02	EQUAL EMPLOYMENT OPPORTUNITY PROGRAM CONTRACTOR REPORT FORM
00 45 36.03	EQUAL EMPLOYMENT OPPORTUNITY PROGRAM QUESTIONNAIRE
00 45 36.04	COUNTY OF SAN MATEO CONTRACTOR DECLARATION FORM
00 45 46	ANTI-TRUST QUESTIONNAIRE
00 52 13	AGREEMENT FORM – STIPULATED SUM
00 61 13.13	PERFORMANCE BOND FORM
00 61 13.16	PAYMENT BOND FORM
00 61 16	BID BOND FORM
00 62 23	RECYCLING & CONSTRUCTION WASTE DIVERSION
00 65 36	WARRANTY (GUARANTEE) FORM
00 72 13	GENERAL CONDITIONS
00 73 36	SUPPLEMENTARY CONDITIONS
00 73 73	SUPPLEMENTARY CONDITIONS – EQUAL BENEFITS ORDINANCE

DIVISION 01 - GENERAL REQUIREMENTS

01 00 00	GENERAL REQUIREMENTS
01 11 00	SUMMARY OF WORK
01 25 00	SUBSTITUTION PROCEDURES
01 29 00	PAYMENT PROCEDURES
01 31 00	PROJECT MANAGEMENT
01 31 13	PROJECT COORDINATION
01 33 23	SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
01 35 13.19	SPECIAL PROJECT PROCEDURES FOR SAN MATEO MEDICAL CENTER FACILITY
01 45 00	QUALITY CONTROL
01 60 00	PRODUCT REQUIREMENTS
01 73 29	CUTTING AND PATCHING

01 73 29 CUTTING AND PATCHING
01 74 00 CLEANING AND WASTE MANAGEMENT
01 77 00 CLOSEOUT PROCEDURES

DIVISION 02 – EXISTING CONDITIONS

02 41 19 SELECTIVE DEMOLITION

DIVISION 05 – METALS

05 40 00 COLD-FORMED METAL FRAMING

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

07 81 00 APPLIED FIREPROOFING
07 92 00 JOINT SEALANTS

DIVISION 08 – OPENINGS

08 11 13 HOLLOW METAL DOORS AND FRAMES
08 12 16 ALUMINUM FRAMES
08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
08 71 00 DOOR HARDWARE
08 80 00 GLAZING
08 88 13 FIRE-RESISTANT GLAZING

DIVISION 09 – FINISHES

09 29 00 GYPSUM BOARD
09 30 00 TILING
09 65 13 RESILIENT BASE AND ACCESSORIES
09 65 16 RESILIENT FLOORING
09 68 00 CARPETING
09 91 23 INTERIOR PAINTING

DIVISION 10 – SPECIALTIES

10 14 23 PANEL SIGNAGE

10 21 13.19 PLASTIC TOILET COMPARTMENT
10 26 00 WALL AND DOOR PROTECTION
10 28 00 TOILET, BATH, AND ACCESSORIES

DIVISION 21 – FIRE SUPPRESSION

21 28 00 FIRE PROTECTION SYSTEMS

DIVISION 22 – PLUMBING

22 10 00 PLUMBING PIPING SYSTEMS
22 19 00 PLUMBING FIXTURES

DIVISION 23 – HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

23 00 00 GENERAL MECHANICAL REQUIREMENTS
23 02 00 SUPPORTS, ANCHORS, AND SEISMIC RESTRAINTS
23 03 00 INSULATION
23 85 00 DUCTWORK SPECIALTIES
23 86 00 DUCTWORK SPECIALTIES
23 99 00 TESTING AND BALANCING

DIVISION 26 – ELECTRICAL

26 05 11 REQUIREMENTS FOR ELECTRICAL INSTALLATIONS
26 05 19 LOW VOLTAGE POWER CONDUCTORS AND CABLES
26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 27 26 WIRING DEVICES
26 51 00 INTERIOR LIGHTING

**FOR TECHNICAL SPECIFICATIONS AND OTHER REQUIREMENTS, SEE OSHDP
APPROVED DOCUMENTS.**

SECTION 00 01 15

LIST OF DRAWING SHEETS

The drawings listed below accompanying this specification form a part of the contract.

Drawing No.	Title
ARCHITECTURAL	
T0.0	Cover Sheet, General Notes, Abbrev. & Project Information
A0.0	AMC & Unreasonable Hardship Form
A0.1	Accessibility Details
A0.2	1 st Floor – Accessibility Plan
A0.3	1 st Floor – Fire and Life Safety Plan
A0.4	3 rd Floor – Accessibility Plan
A0.5	3 rd Floor – Fire and Life Safety Plan
A2.0	Phasing Plans – Phase 1 & Phase 2 – 3 rd Floor (3A) & (3B)
A2.0A	Phasing Plan – Phase 3 – 1 st Floor (PES)
A2.1	1 st Floor PES Demo and New Work Plan
A2.2	1 st Floor PES Demo and New Reflected Ceiling Plan
A2.3	3 rd Floor Suite 3A Demo and New Work Plan
A2.4	3 rd Floor Suite 3A Demo and New Reflected Ceiling Plan
A2.5	3 rd Floor Suite 3B Demo and New work Plan
A2.6	3 rd Floor Suite 3B Demo and New Reflected Ceiling Plan
A2.7	1 st Floor PES Enlarged New Toilet Upgrades Plans and Elevations
A2.8	3 rd Floor Suite 3A Enlarged New Accessibility Toilet Plans and Elevations
A2.9	3 rd Floor Suite 3A Enlarged New Toilet Upgrades Plans and Elevations
A2.10	3 rd Floor Suite 3B Enlarged New Toilet Upgrades Plans and Elevations
A2.11	3 rd Floor Suite 3A TV Details and 3B Vending Machine Floor Plan, Elevation and Details
A2.12	1 st Floor PES New Finish Floor Plan

A2.13	3 rd Floor Suite 3A New Finish Floor Plan
A2.14	3 rd Floor Suite 3B New Finish Floor Plan
A2.15	Finish Schedule
A5.1	Elevations – 1 st Floor PES Interior Elevations
A5.2	Elevations – 1 st Floor PES Interior Elevations
A5.3	Elevations – 3 rd Floor
A5.4	Elevations – 3 rd Floor
A5.5	Elevations – 3 rd Floor
A5.6	Elevations – 3 rd Floor
A5.7	3 rd Floor – 3A Accessibility Toilet Interior Elevations
A7.1	Typical Framing Details
A7.2	Door Schedule
A7.3	Door Hardware Schedule
A7.4	Door Schedule Notes
A7.5	Window Schedule
A8.1	Gyp Board Ceiling Details
A9.0	Details
A9.1	Details

MECHANICAL

M0.1	General Notes, Symbols, and Abbreviations, Legend, Specifications and Details
M2.2	First Floor Plans – Mechanical
M2.4	Third Floor Plans – Mechanical
M2.6	Third Floor Plans – Mechanical

PLUMBING

P0.1	Notes, Symbols, Abbreviations, Legend, and Schedule
P0.2	Specifications
P2.7	Partial First Floor Plans – Plumbing
P2.8	Partial Third Floor Plans – Plumbing
P2.9	Partial Third Floor Plans – Plumbing
P2.10	Partial Third Floor Plans – Plumbing

P8.1 Details

ELECTRICAL

E0.1 Symbols, Abbreviations, General Notes
E2.1 1st Floor PES – Electrical Plans
E2.2 3rd Floor Area A – Electrical Plans
E2.3 3rd Floor Area B – Electrical Plans
E4.1 Enlarged Plans
E5.1 Details
E6.1 Schedules

--- E N D ---

END OF SECTION 00 01 15

DOCUMENT 00 11 09
BIDDING CALENDAR

NOTICE - THIS SUMMARY OF DATES IS FOR INFORMATIONAL PURPOSES ONLY.

The dates and times listed may not be relied upon or enforced. This summary does not form a part of the Contract Documents and does not establish contractual obligations.

NOTICE – THIS IS A SUMMARY ONLY AND DOES NOT LIST ALL DATES, TIMES OR TIME PERIODS CONTAINED IN THE BIDDING AND CONTRACT DOCUMENTS.

All bidders and contractors must refer to the actual documents for all applicable dates, times, and time periods.

Prevent Self Harm & Ligature Project No. P30F1		
Event	Date/Time	Location
Contract Documents Issued for Bid (Released & Available):	November 9, 2020	https://publicworks.smcgov.org/projects-out-bid
Mandatory Pre-Bid Conference and Project Site Visit/Job Walk	November 23, 2020, at 2:00PM	San Mateo Medical Center, 222 West 39 th Avenue, San Mateo CA 94403 See Notice to Contractors Document 00 11 16 for instructions to attend.
Deadline for Questions – Last Day for prospective Bidders to submit questions, in writing, by email to Authorized Contact Person: bdelgado@smcgov.org	December 3, 2020, by 5:00PM	N/A
Response to Questions – Issue Addendum #1	December 8, 2020	https://publicworks.smcgov.org/projects-out-bid
Bids Due:	Before December 23, 2020, 2:30PM	See Notice to Contractors Document 00 11 16
Bid Opening Date:	December 23, 2020, at 2:30PM	See Notice to Contractors Document 00 11 16
Bid Evaluation Period:	December 28, 2020 to January 7, 2021	N/A
Issue Notice of Intent to Award:	January 8, 2021	N/A
Protest Period:	January 11 – 15, 2021	See Instructions to Bidders Document 11 21 13
Submission to County Board for Approval:	February 19, 2021	N/A
Anticipated Contract Award Date:	March 23, 2021	N/A

END OF DOCUMENT

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DOCUMENT 00 11 16

NOTICE TO CONTRACTORS

NOTICE IS HEREBY GIVEN that the Board of Supervisors of the County of San Mateo, State of California, will receive sealed bids for the following construction contract:

PREVENT SELF HARM AND LIGATURE PROJECT

PROJECT NO. P30F1
SAN MATEO MEDICAL CENTER
SAN MATEO, CA 44403

Engineer's Estimate: \$3,450,000

Bids shall be received in accordance with the Contract Documents. The Contract Documents may be examined and/or downloaded at the Department of Public Works website at <https://publicworks.smcgov.org/projects-out-bid> (includes complete bid package).

A **Mandatory** Pre-Bid Conference followed by a Project Site Visit/Job Walk is scheduled for **Monday November 23, at 2:00 PM (Pacific Time)**. The mandatory pre-bid conference will meet at San Mateo Medical Center, outside the main entrance, 222 West 39th Avenue, San Mateo CA 94403. Due to the nature of this hospital project, it is mandatory for interested contractors to attend the pre-bid conference and visit the project site to become familiar with project. **Bids will not be accepted from any prime contractor not present at the mandatory pre-bid conference as evidenced on the attendance roster.**

Please review the Project Plans & Specifications in advance of the Mandatory Pre-Bid Conference and Project Site Visit.

Due to COVID-19 requirements in San Mateo County and at the San Mateo Medical Center, interested Contractors are required to RSVP to the Authorized County Representative no later than **2:00 PM (Pacific Time), Friday November 20, 2020** of their planned attendance (with number of persons) to the Mandatory Pre-Bid Conference and Project Site Visit.

Contractors are expected to provide Personal Protective Equipment (PPE) for their personnel, as published by *Order No. c19-5c (Revised) of the Health Officer of the County of San Mateo*. The entire Order shall be followed by all who live and visit San Mateo County. Contractors shall comply with ALL applicable federal, state, and local health orders and ordinances and are required to continue to check for updates to such orders and ordinances.

Contractors attending the Mandatory Pre-Bid conference and Project Site Visit shall ensure their employees or subcontractors who attend: 1) perform and comply with the “Individual Control Measures and Screening” section of the “*COVID-19 Industry Guidance: Construction*” guidelines publication dated July 29, 2020 (<https://www.dir.ca.gov/dosh/coronavirus/Health-Care-General-Industry.html> and <https://files.covid19.ca.gov/pdf/guidance-construction.pdf>); 2) arrive wearing face covering and eye protection; 3) arrive with recently washed hands or wash hands at the handwashing station at the main entrance to the San Mateo Medical Center; 3) street shoes are preferred; 4) hard hats, vests, and gloves are not required. Upon entry to the medical center, attendees will be subject to a health screening by San Mateo Medical Center staff and will be required to wear the medical mask provided. **Contractors who do not wear the medical mask and PPE as required by San Mateo Medical Center for this event not be able to enter the facility and will not be able to attend the Mandatory Pre-Bid Conference and Project Site Visit, and will not be able to register as a bidder for the Project. .**

Questions regarding this project should be directed to the Authorized Contact Person:
Bernadette Delgado, Project Manager II – Capital Projects
Department of Public Works
555 County Center, 5th Floor, Redwood City, California 94063-1665
Office Phone: (650) 599-7250
Cell Phone: (650) 400-6951

Bids shall be submitted using forms furnished and bound in the Project Manual of the Construction Documents and in accordance with the Instructions to Bidders Document 11 21 13 and shall be accompanied by a Bid Bond.

Bids shall be sealed and filed with the Clerk of the Board of Supervisors of the County of San Mateo at the Hall of Justice and Records, 400 County Center, (formerly 401 Marshall Street) 1st Floor, Redwood City, California, 94063 and filed Bids shall receive the Clerk’s timestamp before **December 23, 2020, 2:30PM (Pacific Time)**. All sealed bids officially received and filed with the Clerk of the Board of Supervisors will be opened in public shortly thereafter outside in front of the 400 County Center Building or at another location as designated by County.

The Board of Supervisors of the County of San Mateo, State of California, reserves the right to reject any and all bids, alternate bids, or unit prices and waive any irregularities in any bid received.

No bidder may withdraw his bid for a period of ninety (90) days after the date set for the opening thereof.

Prospective bidders must be fully qualified, licensed, certified, and insured to perform the Work requested for the Project. All work performed must meet all current applicable laws and regulations.

Pursuant to Labor Code Sections 1770, et seq., the Director of the Department of Industrial Relations has determined the general prevailing rate of wages in the County of San Mateo for each craft, classification, or type of workman needed to execute the contract. The prevailing rates so determined are based on an 8-hour day, 40-hour week, except as otherwise noted. Existing agreements between the Building Trades and the Construction Industry groups relative to overtime, holidays and other special provisions shall be recognized. It shall be mandatory upon the Contractor and upon any sub-contractors under him, to pay not less than the said specific rates to all laborers, workmen or mechanics employed by them in the execution of this contract.

Pursuant to State Senate Bill SB 854 (Stat. 2014, Ch. 28), effective January 1, 2015:

- (1) No Contractor or Subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 (with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)).
- (2) No Contractor or Subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
- (3) This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. All Contractors and Subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).

Contractor and its subcontractor(s) agree to pay not less than prevailing rates of wages and be responsible for compliance with all the provisions of the California Labor Code, Article 2-Wages, Chapter 1, Part 7, Division 2, section 1770 et seq and section 1810 et seq. A copy of the prevailing wage scale established by the Department of Industrial Relations is on file in the office of the Director of Public Works, and available at www.dir.ca.gov/DLSR or by phone at 415-703-4774. California Labor Code section 1776(a) requires each contractor and subcontractor keep accurate payroll records of trades' workers on all public works projects and to submit copies of certified payroll records upon request.

A bid security bond will be required for the faithful performance of the contract in amount of not less than one hundred percent (100%) of the amount of the bid. See Document 00 61 16 Bid Bond.

A payment bond and performance bond will be required pursuant to California Public Contract Code Section 7103 and Section 10221 if a contractor is awarded a contract.

The Work to be performed consists, in general, of providing all labor, materials, tools, appurtenances, and equipment required, as well as any other items and details not mentioned above but required by the Contract Documents and as directed by the Director of Public Works.

County of San Mateo – Department of Public Works
San Mateo Medical Center (SMMC)
SMMC Prevent Self Harm & Ligature Project No. P30F1
OSHPD No. S191567-41-00

The Prevent Self Harm and Ligature Project consists of: Three (3) phases of construction for interior upgrades in the Psychiatric Nursing Unit 3A and Unit 3B and in the Psychiatric Emergency Services Department at the San Mateo Medical Center. This project requires Contractor to have experience working in an occupied hospital / healthcare facility on Office of Statewide Health Planning and Development (OSHPD) general acute-care hospital OSHPD-1 projects. See Document 00 21 13 Instructions to Bidders.

The engineer's estimate for the scope of work of this Project is Three Million Four Hundred Fifty Thousand Dollars (\$3,450,000).

The Contract Time for completion of all the Work of the Project is five hundred forty-four (544) calendar days, as defined as sufficiently complete in accordance with the Contract Documents.

Liquidated Damages are \$1000.00 per calendar day and shall be based on the Contract Time. Pursuant to California Government Code Section 53069.85, Owner may withhold Liquidated Damages from payments to the Contractor as such damages accrue, or, at Owner's discretion, withhold Liquidated Damages from any payments due or that become due pursuant to the Contract, including Retention and final payment.

END OF DOCUMENT 00 11 16

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DOCUMENT 00 21 13

INSTRUCTIONS TO BIDDERS

1. General

- 1.1 Bids shall be received in accordance with the Contract Documents. Each Bidder shall carefully read the complete Contract Documents including these instructions.
- 1.2 Before submitting a bid, each Bidder shall attend the mandatory pre-bid conference and visit the project site and evaluate all conditions and limitations involved thereon as no allowance will be made because of the lack of such examination and knowledge.
- 1.3 Only licensed Contractors authorized to do business under the laws of the State of California and able to qualify as follows will be eligible to submit a bid.
- 1.4 Contractors shall meet the following qualifications for this project:
 - A. Contractors bidding to the County shall have a minimum five (5) years continuous experience as a prime contractor on Office of Statewide Health Planning and Development (OSHPD) projects in California of comparable quality, size, complexity, and type.
 - B. Contractors bidding to the County shall have completed as the prime three (3) OSHPD projects of comparable quality, size, complexity and type, preferably in an operating facility, and the projects have been closed with OSHPD compliance.
 - C. Contractors bidding to the County shall submit Superintendent's qualifications with a minimum of three (3) years supervising OSHPD projects of comparable quality, size, complexity, and type.
 - D. Subcontractors shall meet the above two requirements in A. and B. as it pertains to their Work.
 - E. Contractor is legally authorized to do business in the State of California.
 - F. Within two (2) business days of request by County, Contractor shall submit evidence of compliance to the above qualifications (in A. B., and C.) and a list of all project work performed, both complete and incomplete, within the previous five (5) years including the names and phone numbers of the Owners and Architects.
- 1.5 Contractors shall meet the following construction requirements:

- A. Permits: All work is subject to inspection and acceptance of the Authority Having Jurisdiction (AHJ).
- B. Differing Site Conditions: Contractor is advised the work will be performed in an existing structure.
- C. Work shall be performed between the construction hours of 7:00AM to 5:00PM, unless otherwise agreed upon between the County, Contractor and San Mateo Medical Center due to extenuating factors.
- D. Contractor is advised the County intends to maintain active utility operations specific to facility systems during construction. Existing systems and utility outages, and shutdowns shall be approved in advance by the County. Refer to Document 01 35 13.19 Special Project Procedures for San Mateo Medical Center Facility.
- E. Contractor to coordinate with the County regarding providing temporary construction barriers and public wayfinding signage for duration of project.
- F. The San Mateo Medical Center Infectious Control Policy and Procedures pertaining to infection control construction requirements. Refer to Document 01 35 13.19 Special Project Procedures for San Mateo Medical Center Facility.
- G. Schedule: Contractor's attention is directed to the Contract Time and the requirement of the Contractor to achieve substantial completion of the work within said time period. Construction shall be completed within Contract Time defined as sufficiently complete in accordance with the Contract Documents to allow the Owner to occupy or utilize for its intended use.
- H. Sequence of Construction. Bidder is advised there will be two pauses in the prosecution of the work to obtain a re-certification survey for re-occupancy of a completed construction phase from the California Department of Public Health (CDPH). The first pause will occur after completion of Phase 1 construction, to obtain approval to occupy from the CDPH and for allowing for patient relocation before commencing Phase 2. The second pause in the prosecution of work will occur after completion of Phase 2 construction, to obtain approval to occupy from the CDPH and for allowing for patient relocation before commencing Phase 3. It is anticipated at the time of bidding that these respective pauses for prosecuting work may not exceed 6 weeks each and during these two timeframes Contractor delay claims will not be considered regarding these two pauses in the prosecution of work. Refer to Section 01 11 00 Summary of Work.
- I. Contractor shall be required to attend weekly construction project meetings with County and County's Representatives for the duration of the project. Contractor shall track meeting action items and provide updates per Contract Documents.

- J. Contractor's Personnel: Contractor shall submit within ten (10) working days from the execution of the Contract a list of names, addresses, and telephone numbers of key personnel who are to be contacted in case of emergencies on the job during non-working hour, including Saturdays, Sundays, and Holidays. Contractor shall update the list during the project and ensure the latest revision is posted in project office and provided to County Representatives.

All personnel who will have access to the work site may be required to wear photo identification issued by the County at all times. Photo identification will only be issued to each worker after successful completion of a background check clearance from the Sheriff's Office. The County will notify the Contractor within five (5) working days if any workers are deemed acceptable or unacceptable as a result of a background check clearance. The County reserves the right to reject personnel with current parole or probationary status and/or criminal records. County staff reserves the right to request a worker be excused from the job site for not wearing the appropriate photo identification issued by the County. No claims for delays will be allowed for failure on the part of the Contractor to enforce this requirement.

1.6 Contract Documents:

Questions regarding the Contract Documents, such as discrepancies, conflicts, omissions, doubt as to meanings, or regarding scope of work shall be referred to the County Authorized Contact Person. Inquiries must be received by the Authorized Contact Person not later than 96 hours before bid time. Inquiries will be answered in writing to all bidders of record if a response or written clarification is warranted in the opinion of the Owner. The Owner will not be responsible for oral clarifications. Regarding questions on the Contract Documents in the absence of written clarifications, Contractor is instructed to bid the more expensive method or materials.

2. Bid Proposals

- 2.1 Bids shall be submitted in accordance with the Contract Documents. Bid documents shall be submitted on County forms provided in these Contract Documents, and are to be properly and fully completed, including the designation of all subcontractors who will perform work or labor or render service on behalf of Contractor, in an amount in excess of one-half of one percent of the Contractor's total bid. Bidders must complete and submit all of the following documents with their Bid:

1. Document 00 41 13 – Bid Form and Designated Subcontractor List
 2. Document 00 45 19 - Non-Collusion Declaration
 3. Document 00 45 36.01 – EEO Certification of Compliance & Intent
 4. Document 00 45 36.02 – EEO Program Contractor Report Form
 5. Document 00 45.36.03 - EEO Program Questionnaire
 6. Document 00 45 46 - Anti-Trust Laws Questionnaire
 7. Document 00 61 16 - Bid Bond (Bid Security) Form
- 2.2 No bid will be considered which makes exceptions, changes, or in any manner makes reservations to the terms of the Contract Documents.
- 2.3 Unit Prices on all classes of work as specified or required shall be submitted. Additions to or deductions from the contract sum shall be based on these unit prices. However, none will be acceptable that are above and beyond a fair and just amount and may be subject to third party estimator verification and reasonable adjustment before the signing of the Contract or bid disqualification.
- 2.4 Each bid must give the full business address of the bidder and be signed by the bidder with his usual signature. Bids by partnerships must furnish the full name of all partners and must be signed in the partnership name by one of the members of the partnership or by any authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation, followed by the name of the State of incorporation and by the signature and designation of the president, secretary, or other person authorized to bind it in the matter. Corporations must furnish a Certificate attesting to the existence of the corporation. The name of each person signing shall also be typed or printed below the signature. When requested by the Owner, satisfactory evidence of the authority of the officer signing on behalf of the corporation shall be furnished.
- 2.5 Bids are to be submitted in separate sealed envelopes. Envelopes shall be marked in lower left corner "Bid for" (provide contract title) and "Bid Opening" (provide bid opening date and time).

Deliver all bids to Clerk of the Board of Supervisors of the County of San Mateo at the Hall of Justice and Records, 400 County Center, (formerly 401 Marshall Street) 1st Floor, Redwood City, California, 94063 for the Clerk's timestamp of receipt before the day of **December 23, 2020, 2:30PM.**

- 2.6 All sealed bids officially received and filed with the Clerk of the Board of Supervisors of the County of San Mateo on or before the day of **December 23, 2020, 2:30PM** will be opened in public shortly thereafter

outside of the 400 County Center building or at another location as designated at that time by County Clerk of the Board.

- 2.7 No bid will be considered which is received after the date and time set for the deadline to receive bids as stated herein, as determined by County.

3. Bonds and Insurance

- 3.1 Bids shall be accompanied by a cashier's check or a certified check payable to County, or a Bid Bond of not less than ten percent (10%) of the amount of the base Bid, plus all additive alternates as required. Required form of corporate surety, a Bid Bond Form, is provided by County and must be used and fully completed by Bidders choosing to provide a Bid Bond as security. The Surety on Bidder's Bid Bond must be an insurer admitted in the State of California and authorized to issue surety bonds in the State of California. Bids submitted without necessary bid security will be deemed non-responsive and will not be considered.
- 3.2 Two bonds, as itemized below and in the forms presented in these Contract Documents, shall be furnished by the successful Bidder within ten (10) calendar days after notification of award, and by which documents shall be filed with the Department of Public Works, Capital Projects Division, 555 County Center, 5th Floor, Redwood City, California. The bonds shall be in the form of surety bonds issued by corporations duly and legally licensed to transact business in the State of California, satisfactory to the County. Premiums for said bonds shall be paid by the Contractor and maintained at Contractor's expense during the period prescribed herein for the completion of the work to be performed under the contract.
- 3.3 Performance Bond in amount of 100 percent (100%) of the Contract Amount to insure County during construction and for the guarantee period after completion against faulty or improper materials or workmanship and to assure County of full and prompt performance of Contract.
- 3.4 Payment Bond in amount of 100 percent (100%) of the Contract Amount in accordance with the laws of the State of California to secure payment of any and all claims for labor and material used or consumed in performance of this Contract.
- 3.5 Workers' Compensation Insurance, Comprehensive General Liability Insurance, and Motor Vehicle Liability Insurance and evidence thereof shall be furnished to County and shall be maintained by the Contractor as detailed in the General Conditions.

4. Wage Rates

- 4.1 The Director of Industrial Relations has determined the general prevailing rate of wages in the County of San Mateo.
- 4.2 In accordance with the General Conditions, it shall be mandatory upon the Contractor and Subcontractors to pay not less than the said prevailing wage rates to all laborers, workmen, or mechanics employed by them in the execution of this Contract. When applicable, both Contractor and Subcontractor hereby agree to pay not less than prevailing rates of wages and be responsible for compliance with all the provisions of the California Labor Code, Article 2-Wages, Chapter 1, Part 7, Division 2, Section 1770 et seq and Section 1810 et seq. A copy of the prevailing wage scale established by the Department of Industrial Relations is on file in the office of the Director of Public Works, and available at www.dir.ca.gov/DLSR or by phone at 415-703-4774. California Labor Code Section 1776(a) requires each Contractor and Subcontractor keep accurate payroll records of trades workers on all public works projects and to submit copies of certified payroll records upon County's request.
- 4.3 The Contractor's attention is further directed to the following requirements of State Senate Bill SB 854 (Stat. 2014, Chapter 28), effective January 1, 2015:
 - (1) No Contractor or Subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 (with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)).
 - (2) No Contractor or Subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
 - (3) This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.
- 4.4 The Contractor is further advised that, pursuant to State Senate Bill SB 854 (Stat. 2014, Chapter 28), effective January 1, 2015, all contractors and subcontractors working on a contract for public work on a public works project (awarded on or after April 1, 2015) must furnish electronic certified payroll records to the Labor Commissioner.

5. Non-Discrimination

- 5.1 All Contractors with contracts over \$5,000 must comply with the County Ordinance No. 4026, Chapter 2.93 of the County of San Mateo Ordinance

Code with respect to the provision on employee benefits. The ordinance mandates that Contractors provide to employees with domestic partners benefits equal to those provided to employees with spouses.

6. Contractor Employee Jury Service Ordinance

6.1 For contracts over \$100,000, Contractor shall comply with the County Ordinance No. 4324, Chapter 2.85 of the County of San Mateo Ordinance Code with respect to provision of jury duty pay to employees. Refer to Document 00 45 29 Jury Service and Wage Compensation.

7. Recycling and Diversion of Debris from Construction and Demolition Ordinance

7.1 All Contractors with demolition contracts exceeding \$5,000 in value; or construction contracts exceeding \$250,000 in value; or construction contracts consisting of at least 2,000 square feet shall comply with the County Ordinance No. 4099, Chapter 4.105 of the County of San Mateo Ordinance Code for with respect to construction and demolition debris. Refer to Document 00 62 63 Recycling and Diversion of Debris from Construction and Demolition.

8. Sole Source Products and/or County Vendors

8.1 The County has found and determined that the following item(s) shall be used on this Project based on the purpose(s) indicated. Public Contract Code Section 3400(b): A particular material, product, thing, or service is designated by specific brand or trade name for the following purpose(s):

(1) In order to match other products in use at the San Mateo Medical Center.

(2) In order to obtain a necessary item that is only available from one source.

See Drawings and Specifications for specific project requirements.

8.2 Fire Alarm System and Product Manufacturer:

Siemens Industry, Inc.

25821 Industrial Boulevard

Hayward, CA 94545

Contact: Jon Meurer, jon.meurer@siemens.com

Phone: (510) 305-8510

8.3 Access Control Vendor:

Johnson Controls, Inc.
Contact: Andrew Aguero
Phone: (510) 600-5175

8.4 SMMC Sign Vendor:
GNU Group
Contact: Andrea Guzman
Phone: (925) 444-2024
Mobile: (925) 219-2232
Email: aguzman@gnugroup.com

8.5 Nurse Call System
Executone CareCom II System
Triteck Telecom
Phone: (858) 397-1241 (Andre)
or
Contact: Eugenn Grellus at (916) 955-7755

9. Contractor Selection and Contract Award

9.1 Before a contract is awarded, the Director of Public Works may, at his sole discretion, require from the proposed contractor evidence of his ability to faithfully, capably, and reasonably perform such proposed contract within the Contract Time and for the Contract Amount and may consider such evidence before making a decision on the award of such proposed contract.

9.2 The County reserves the right to reject any and all bid proposals, to contract work with whomever and in whatever manner, to abandon work entirely, or waiver of any irregularities in receiving bids.

9.3 The contract shall be awarded to the lowest and most responsible bidder as interpreted by the County in accordance with the Contract Documents. The Base Bid shall be used to determine the lowest bidder. Alternates may be accepted and awarded to the lowest and most responsible bidder, as determined above, in any combination or order.

9.4 Once a decision has been made to award a contract to a bidder, the County will issue a Notice of Intent to Award to notify all bidders of the selected bidder

10: Protests

Protests that do not comply with the protest procedures outlined below will be rejected.

10.1 Protest Eligibility, Format, and Address

(1) Protests or objections may be filed regarding the procurement process, the content of the solicitation, Construction Documents, or any addenda, or contract award.

(2) The County will only review protests submitted by an interested party, defined as an actual or prospective bidder whose direct economic interest could be affected by the County's conduct of the solicitation. Subcontractors do not qualify as interested parties.

(3) Submit protests to the Department of Public Works by registered mail to:

Kevin Sporer, Deputy Director
Department of Public Works
County of San Mateo
555 County Center, 5th Floor
Redwood City, Ca 94063.

10.2 Protest Deadlines

Submit Protests with any supplemental materials by 2:00PM, Pacific Standard Time, (PST), as appropriate, on the deadlines set forth below. The date of filing is the date the County receives the protest, unless received after 2:00PM PST, or on other than a Business Day, in which case the date of filing will be the next Business Day. Failure to file by the relevant deadline constitutes a waiver of any protest on those grounds. Supplemental materials filed after the relevant deadline may be rejected by the County.

- (1) If relating to the content of the solicitation or to an addendum, file within five (5) Business days after the date the County releases the solicitation or addendum.
- (2) If relating to any notice of non-responsiveness or non-responsibility, file within five (5) Business Days after the County issues such notice.
- (3) If relating to intent to award, file within five Business Days after the County issues notice of Intent to Award. No protests will be accepted once actual award has been made.

10.3 Protest Contents

(1) The letter of protest must include all of the following elements:

DOCUMENT 00 21 13
INSTRUCTIONS TO BIDDERS

- a) Detailed grounds for the protest, fully supported with technical data, test results, documentary evidence, names of witnesses, and other pertinent information related to the subject being protested; and
- b) The law, rule, regulation, ordinance, provision or policy upon which the protest is based, with an explanation of the violation.

(2) Protests that simply disagree with decisions of the Department of Public Works will be rejected.

10.4 Reply to Protest

The County will send a written response to the protestor and to any other party named in the protest.

10.5 No Stay of Procurement Action during Protest

Nothing in these protest requirements will prevent the County from proceeding with negotiations or awarding a purchase order or contract while a protest is pending.

11. Public Records

11.1 General

(1) All bids, protests, and information submitted in response to this solicitation will become the property of the County and will be considered public records. As such, they may be subject to public review.

(2) Any contract arising from this solicitation for bids will be public record.

(3) Submission of any materials in response to this solicitation for bids constitutes:

- a) Consent to the County's release of such materials under the Public Records Act without notice to the person or entity submitting the materials; and
- b) Waiver of all claims against the County and/or its officers, agents, or employees that the County has violated a proposer's right to privacy, disclosed trade secrets, or caused any damage by allowing the bid or materials to be inspected; and
- c) Agreement to indemnify and hold harmless the County for release of such information under the Public Records Act; and
- d) Acknowledgement that the County will not assert any privileges that may exist on behalf of the person or entity submitting the materials.

11.2 Confidential Information

(1) The County is not seeking proprietary information and will not assert any privileges that may exist on behalf of the proposer: Proposers are responsible for asserting any applicable privileges or reasons why a document should not be produced in response to a public record request.

(2) If submitting information protected from disclosure as a trade secret or any other basis, identify each page of such material subject to protection as “CONFIDENTIAL”. If requested material has been designated as confidential, the County will attempt to inform the proposer of the public records request in a timely manner to permit assertion of any applicable privileges.

(3) Failure to seek a court order protecting information from disclosure within ten (10) days of the County’s notice of the request to the proposer will be deemed agreement to disclosure of the information and the proposer agrees to indemnify and hold the County harmless for release of such information.

(4) Requests to treat and entire proposal as confidential will be rejected and deemed agreement to County disclosure of the entire proposal and the proposer agrees to indemnify and hold the County harmless for release of any information requested.

(5) Trade secrets will only be considered confidential if claimed to be a trade secret when submitted to the County, marked as confidential, and compliant with Government Code Section 6254.7.

END OF DOCUMENT 00 21 13

DOCUMENT 00 41 13

BID FORM

STIPULATED SUM SINGLE-PRIME CONTRACT

To: The County of San Mateo
State of California

From: _____
(Proper Name of Bidder)

For: **Prevent Self Harm and Ligature Project**
San Mateo Medical Center, San Mateo California 94403
Project Number: P30F1

Bid Opening Date: December 23, 2020, at 2:30PM

1. SCOPE OF BIDS – The undersigned, doing business under the name of

_____,
declares that the only persons or parties interested in this Bid proposal as Principals are those named herein; that this Bid is made without collusion with any other person, firm or corporation; that Principals have carefully examined the location of the proposed Work, the form of Agreement, and the Contract Documents therein referred to; that they propose, and agrees if this Bid is accepted, that Principals will contract with the County of San Mateo, in the form of the Agreement in the Contract Documents, and shall perform all the Work and furnish all the materials specified in the Contract Documents for the following amount(s). The base bid, unit prices, alternates, allowances, as applicable, shall include all labor, materials, equipment, supervision, overhead, profit, and incidentals necessary to complete the Work in accordance with the Contract Documents. The Base Bid will be used to determine the lowest responsible bidder.

2. BASE BID – Base bids shall include all Work specified in the Contract Documents. Write base bid in words and numbers. The base bid is the Contract Amount.

_____ Dollars
(\$ _____)

3. UNIT PRICES: Not used.
A unit price shall be quoted for each of the following items of Work in accordance with the Contract Documents. Unit Prices shall apply to Work added to or deducted from the

contract by Change Order. Unit Prices will not apply to Work in the Contract Documents unless specifically called out to be paid by a unit price.

4. ALLOWANCES: Not Used.

5. ALTERNATES: Not Used.

6. CONTRACT – If written notice (by electronic mail and U.S. Mail) of the acceptance of this Bid to the undersigned occurs within ninety (90) calendar days after the date of opening the bids, or any time thereafter before the bid is withdrawn, the undersigned will, within ten (10) calendar days after the date of such notice, execute and deliver a contract in the Form of Agreement provided in these Contract Documents and submit with Agreement required Payment and Performance Bonds in the form provided in these Contract Documents. The undersigned designates the address provided in Section 14 of this form to be the place of business to which such notice of acceptance may be mailed or delivered.

7. TIME OF COMPLETION – The undersigned agrees, if awarded the Contract, to complete this entire work within Contract Time specified in Document 00 11 16 Notice to Contractors.

8. BONDS – The undersigned agrees, if awarded the Contract to execute within ten (10) calendar days, two corporate surety bonds as called for in Document 11 21 13 Instruction to Bidders.

9. INSURANCE – Bidder's Insurance as required for this Contract is placed with:

Bidder's Workers Compensation Insurance is placed with:

Bidder's All Other Risk Insurance is placed with:

10. ADDENDA – All Addenda during Bidding are bound with Contract Documents and issued during the time of bidding.

11. ADDENDA RECEIPT – The receipt and acceptance of the following addenda is hereby acknowledged:

ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____

12. This Bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

13. CONTRACTOR'S LICENSE – The undersigned agrees, if awarded the contract, to maintain and keep current through the completion of the contract the valid licenses for the work to be performed as required by the California Contractors License Law and all other applicable licensing requirements.

License No.	License Class	Expiration Date
-------------	---------------	-----------------

14. By the signature below, the Bidder certifies, under penalty of perjury, the accuracy of the representations made in this Bid proposal.

Dated _____, 20_____.

Company
Business Type _____Corporation _____Partnership _____Sole Proprietorship

State of Incorporation of Location of Business Registration: _____

Name of Bidder: _____

Type of Organization: _____

Signed by: _____

Print Name of Signer: _____

Title of Signer: _____

Address of Bidder: _____

Phone: _____ Fax: _____

Email: _____

Taxpayer Identification Number of Bidder: _____

Department of Industrial Relations Registration Number: _____

If Bidder is a partnership, give full names of all partners: _____

If Bidder is a corporation, affix corporate seal.

Name of Corporation: _____

President/Secretary/Treasurer/Other: _____

15. DESIGNATION OF SUBCONTRACTORS – In compliance with the provisions of Sections 4100-4108 of the Public Contract Code of the State of California, and any amendments thereof, each Bidder shall set forth and list below the name and the location of each subcontractor who will be employed, and the kind of work that each will perform work or labor or render service to the Bidder in or about the construction of the Work in an amount in excess of one-half of one percent (1/2 of 1%) of the Bidder's total Bid to County, if the Contract is awarded to the Bidder. Any work that the Bidder fails to list, Bidder agrees to perform that portion itself or be subject to penalty under applicable law.

In case more than one subcontractor is named for the same kind of work, state the portion that each will perform. Vendors or suppliers of materials only do not need to be listed.

Reference: Notice to Contractor regarding State Senate Bill SB 854

DESIGNATION OF SUBCONTRACTORS - Please List All Subcontractor's

DESIGNATED SUBCONTRACTOR LIST				
Project Number: P30F1		Project Name: Prevent Self Harm and Ligature Project		
Name and City of Subcontractor (1) (4)	Description of Work: Reference to Contract Items (1)	Price Under Contract (2) (3)	State of California Contractor's License (2)	Department of Industrial Relations Registration No. (DIR) (2)

- (1)** Submit this information with sealed bid.
- (2)** This information shall be required of the two (2) apparent low bidders, no later than two days following the bid opening. **DO NOT INCLUDE THIS INFORMATION WITH BID.**
- (3)** Dollar amounts will be treated as proprietary and will solely be for the use of County staff. **DO NOT INCLUDE THIS INFORMATION WITH BID.**
- (4)** Submit full address of Subcontractors two days following bid opening.

Attach additional page as necessary. Indicate "none" or number or pages attached here: _____ pages attached.

END OF DOCUMENT 00 41 13

DOCUMENT 00 45 19

NON-COLLUSION DECLARATION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

Project: **Prevent Self Harm and Ligature Project**
San Mateo Medical Center, San Mateo, CA 94403

Project No.: P30F1

The undersigned declares:

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

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

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____date], at _____city], _____state]."

Signature

Title

(ATTACH NOTARIAL ACKNOWLEDGMENT FOR THE ABOVE SIGNATURE)

END OF DOCUMENT 00 45 19

DOCUMENT 00 45 19
NON-COLLUSION DECLARATION

DOCUMENT 00 45 26

WORKERS' COMPENSATION CERTIFICATION

Contract Between County Of San Mateo (The "County" Or The "Owner") and _____ (The "Contractor" Or The "Bidder") for the construction of:

PREVENT SELF HARM AND LIGATURE PROJECT NO. P30F1 (The "Contract" Or The "Project")

Labor Code §3700 provides:

"Every employer, except the State, and all political subdivisions or institutions thereof, shall secure the payment of compensation in one or more of the following ways:

- (a) By being insured against liability to pay compensation by one or more insurers, duly authorized to write compensation insurance in this State.
- (b) By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to employees."

I am aware of the provisions of §3700 of the Labor Code that require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work of this Contract.

Date: _____ 20_____

By _____
(Signature of Contractor)

Print Name: _____
(Name of Contractor)

_____ (Official Title)

(Labor Code §1861 requires that this Contractor certification must be signed and filed by the Contractor with the public agency prior to performing any Work.)

END OF DOCUMENT 00 45 26

DOCUMENT 00 45 29

JURY SERVICE AND WAGE COMPENSATION

COUNTY OF SAN MATEO CONTRACTOR EMPLOYEE JURY SERVICE ORDINANCE NO. 4324, CHAPTER 2.85

2.85.010 Definitions

For the purposes of this chapter:

(a) "Contract" means a legal agreement between the county and a contractor for public works, consulting, or other services, or for purchase of supplies, material or equipment.

(b) "Contractor" means a party who enters into a contract with the county for which the contractor receives consideration of \$100,000 or more.

(c) "Contract Authority" means the Board of Supervisors or the head of the department or agency presenting the proposed contract to the Board of Supervisors.

(d) "Employee" means any California resident who is a full-time employee of a contractor under the laws of California.

(e) "Full time" means 40 hours or more worked per week, or a lesser number of hours if

- (1) the lesser number is a recognized industry standard as determined by the County Manager, or
- (2) the contractor has a long standing practice that defines the lesser number of hours as full time. (Ord. 4324, 08/15/06)

2.85.020 Contractor Jury Service Policy

(a) A contractor shall have and adhere to a written policy that provides that its employees shall receive from the contractor, on an annual basis, no less than five days of regular pay for actual jury service in San Mateo County. The policy may provide that employees deposit any fees received for such jury service with the contractor or that the contractor deduct from the employees' regular pay the fees received for jury service.

(b) At the time of seeking a contract, a contractor shall certify to the County that it has and adheres to a policy consistent with this chapter or will have and adhere to such a policy prior to award of the contract.

(c) The Board of Supervisors may waive the requirements of this chapter when it determines that it is in the best interests of the County for such reasons as follows:

1. Award of a contract or amendment is necessary to respond to an emergency;

2. The Contractor is a sole source;
3. No compliant contractors are capable of providing goods or services that respond to the County's requirements;
4. The requirements are inconsistent with a grant, subvention or agreement with a public agency;
5. The County is purchasing through a cooperative or joint purchasing agreement.

(d) Contractors should submit requests for waivers of the terms of this chapter to the Contract Authority or the County Manager.

(e) The County Manager may reject a contractor's bid or proposal, or terminate a contract, if he determines that the contractor is in violation of the requirements of this chapter or was established, or is being used, for the purpose of evading the intent of this chapter.

(f) No contract shall be executed with a contractor unless such contractor is in compliance with this chapter. (Ord. 4324, 08/15/06)

2.85.030 Powers and duties of the County Manager

The County Manager's office shall have the authority to:

(a) Adopt rules and regulations, in accordance with this chapter and the Ordinance Code of the County of San Mateo, establishing standards and procedures for effectively carrying out this chapter;

(b) Receive notification from employees of contractors regarding violations of this chapter;

(c) Determine and recommend to the Board of Supervisors for final decision the imposition of appropriate sanctions for violation of this chapter by contractors including, but not limited to:

1. Disqualification of the contractor from bidding on or being awarded a County contract for a period of up to 5 years, and
2. Contractual remedies, including, but not limited to termination of contract.

(d) Impose other appropriate contractual sanctions for violations of this chapter;

(e) Allow for remedial action after a finding of noncompliance.

(g) Perform such other duties as may be required or which are necessary to implement the purposes of this chapter. (Ord. 4324, 08/15/06)

2.85.040 Date of Application

The provisions of this chapter shall apply to any contract awarded or amended on or after September 01, 2005, provided that if the contractor is then signatory to a collective bargaining agreement, this chapter shall only apply to any contract with that contractor which is awarded or amended after the effective date of the next collective bargaining agreement. (Ord. 4324, 08/15/06)

END OF DOCUMENT 00 45 29

DOCUMENT 00 45 36.01
EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS
CERTIFICATION OF COMPLIANCE
WITH LAWS PROHIBITING DISCRIMINATION

THIS FORM MUST BE COMPLETED IN FULL AND SUBMITTED WITH THE BID

We are in compliance with the Equal Employment Opportunity Requirement of Executive Order 11246, Title VII of the Civil Rights Act of 1964, the California Fair Employment Practices Act, Section 503 of the Rehabilitation Act of 1973, and any other federal or state laws relating to equal employment opportunity and the provisions of Title 2, Chapter 2.50 of the San Mateo County Ordinance Code and the Board established guidelines implementing them.

We will not discriminate against any employee or applicant for employment based on race, religion, color, national origin, age, ancestry, physical or mental disability, sexual orientation, or sex. This pertains to the areas of recruitment, hiring, training, upgrading, transfer, compensation, and termination.

CERTIFICATION OF INTENT

We will develop and implement, during the course of the work concerned, an Equal Employment Opportunity Program of hiring and employment conducted without regard to race, religion, color, national origin, age, ancestry, physical or mental disability, sexual orientation, or sex of the applicants. With this certification we shall submit any and all information which may be required by the County in connection with this program.

Date: _____

Bidder/Company Name: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT 00 45 36.01

DOCUMENT 00 45 36
CERTIFICATE OF COMPLIANCE & INTENT

DOCUMENT 00 45 36.02

**EQUAL EMPLOYMENT OPPORTUNITY PROGRAM
 CONTRACTOR REPORT FORM**

THIS FORM MUST BE COMPLETED IN FULL AND SUBMITTED WITH THE BID

Project: **Prevent Self Harm and Ligature Project**
 San Mateo Medical Center, San Mateo CA 94403

Project No.: P30F1

Company Name: _____ Date: _____

RACIAL/ETHNIC MAKEUP OF THE COMPANY

Be sure to include the total of all employees in each classification in the first column, not just minorities. Report the number of employees enrolled in formal on-the-job (apprenticeship) training programs in parenthesis () for each classification.

Minority Employees										
Job Classification	Total All Employees	Ethnicity								
		American-Indian or Native Alaskan	Asian	Native Hawaiian or Pacific Islander	Black American or African American	Caucasian	Filipino	Hispanic or Latino (1)	Other (2)	Unidentified (3)
Total(s)										

Ethnicity Notes:

- (1) “Hispanic” includes all persons of Mexican, South and Central American, Puerto Rican, Cuban or Spanish ancestry.
- (2) “Other” includes all others whose origin consists of two or more races other than Hispanic or Latino.
- (3) Use this category for employees who have chosen not to identify any race or ethnicity, including “Other”.

END OF DOCUMENT 00 45 36.02

DOCUMENT 00 45.36.03

**EQUAL EMPLOYMENT OPPORTUNITY PROGRAM
QUESTIONNAIRE**

THIS QUESTIONNAIRE MUST BE COMPLETED IN FULL BY AN OFFICIAL OF THE
COMPANY AND SUBMITTED WITH THE BID

Project: **Prevent Self Harm and Ligature Project**
San Mateo Medical Center, San Mateo, CA 94403

Project No.: P30F1

Company Name: _____

Name of Company Official: _____

Phone: _____ Date: _____

1. Yes No Have you read and are you acquainted with the Equal Employment Opportunity Requirement of Executive Order 11246, Title VII of the Civil Rights Act of 1964, Section 503 of the Rehabilitation Act of 1973, the California Fair Employment Practices Act and Title 2, Chapter 2.50 of the San Mateo County Ordinance Code?

2. Yes No Is it the policy of your company to recruit, hire, train, upgrade, transfer, compensate, and discharge without regard to race, religion, color, national origin, age, ancestry, physical or mental disability, sexual orientation, or sex?

3. Yes No Have you appointed an Equal Employment Opportunity Officer? Give his name, position in the company, office address, and phone number.

4. Yes No Does your employment advertising state that you are an Equal Opportunity Employer?

5. _____Yes _____No Have all recruitment sources been advised that all qualified applicants will be considered for employment without regard to race, religion, color, national origin, age, ancestry, physical or mental disability, sexual orientation, or sex?

6. _____Yes _____No Were any employees hired by means other than the union hiring hall in the past year?

How many? _____

What positions? _____

7. If non-union personnel are employed by the company, or if a position cannot be filled by the union hall, specify the advertisement and recruitment sources that are used. (For example, State HRD, newspapers, high schools, vocational schools, referral agencies/organizations, community groups).

8. How many apprentices do you employ? _____

How many of these are minorities? _____

9. _____Yes _____No Do you have a program for upgrading and counseling present employees?

Describe: _____

10. _____Yes _____No Do you have a collective bargaining agreement with a labor union or other organization?

Please list these groups: _____

11. What percentage of your work force is covered by union agreement? _____

12. _____ Yes _____ No Have you advised the labor union and/or worker organization of your company's responsibility under the Equal Employment Opportunity Program?

13. _____ Yes _____ No Does your company's collective bargaining agreement include a provision for non-discrimination in employment?

14. _____ Yes _____ No Have you notified all subcontractors submitting bids to you that they will be subject to the same minority employment requirements should you be the successful bidder?

15. Describe any previous experience with Equal Employment Opportunity Programs:

16. State what Equal Employment Opportunity Program you plan to take in connection with this project:

If your company has a written Equal Employment Opportunity Program now in effect, please attach a copy of it.

END OF DOCUMENT 00 45.36.03

DOCUMENT 00 45 36.03
EEOP QUESTIONNAIRE

DOCUMENT 00 45 36.04

**County of San Mateo
 Contractor’s Declaration Form**

I. CONTRACTOR INFORMATION

Contractor Name:		Phone:	
Contact Person:		Fax:	
Address:	Number of employees:		

II. EQUAL BENEFITS (check one or more boxes)

Contractors with contracts in excess of \$5,000 must treat spouses and domestic partners equally as to employee benefits.

- Contractor complies with the County’s Equal Benefits Ordinance by:
 - offering equal benefits to employees with spouses and employees with domestic partners.
 - offering a cash equivalent payment to eligible employees in lieu of equal benefits.
- Contractor does not comply with the County’s Equal Benefits Ordinance.
- Contractor is exempt from this requirement because:
 - Contractor has no employees, does not provide benefits to employees’ spouses, or the contract is for \$5,000 or less.
 - Contractor is a party to a collective bargaining agreement that began on _____ (date) and expires on _____ (date), and intends to offer equal benefits when said agreement expires.

III. NON-DISCRIMINATION (check appropriate box)

- Finding(s) of discrimination have been issued against Contractor within the past year by the Equal Employment Opportunity Commission, Fair Employment and Housing Commission, or other investigative entity. Please see attached sheet of paper explaining the outcome(s) or remedy for the discrimination.
- No finding of discrimination has been issued in the past year against the Contractor by the Equal Employment Opportunity Commission, Fair Employment and Housing Commission, or any other entity.

IV. EMPLOYEE JURY SERVICE (check one or more boxes)

Contractors with original or amended contracts in excess of \$100,000 must have and adhere to a written policy that provides its employees living in San Mateo County up to five days regular pay for actual jury service in the County.

- Contractor complies with the County’s Employee Jury Service Ordinance.
- Contractor does not comply with the County’s Employee Jury Service Ordinance.
- Contractor is exempt from this requirement because:
 - the contract is for \$100,000 or less.
 - Contractor is a party to a collective bargaining agreement that began on _____ (date) and expires on _____ (date), and intends to comply when the collective bargaining agreement expires.
 - Contractor has no employees.
 - Contractor has no employees who live in San Mateo County.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am authorized to bind this entity contractually.

Signature

Name

Date

Title

DOCUMENT 00 45 46

ANTI-TRUST LAWS QUESTIONNAIRE

THIS QUESTIONNAIRE MUST BE COMPLETED IN FULL AND SUBMITTED WITH
THE BID

Project: **Prevent Self Harm and Ligature Project**
San Mateo Medical Center, San Mateo CA 94403

Project No.: P30F1

Company Name: _____

In accordance with instructions from the State of California Attorney General’s Office, with regard to California and Federal Anti-Trust Laws, answers to the following must be included with the bid.

1. Yes No Were bid depository of registry services used in obtaining subcontractor bid figures in order to compute your bid?

2. If the answer to No. 1 is “Yes” please list the subcontractors using a bid depository or registry service.

3. Yes No Did you have any source of subcontractor’s bids other than bid depositories?

4. Yes No Has any person or group threatened you with subcontractor boycotts, union boycotts, or other sanctions to attempt to convince you to use the services or abide by the rules of one or more bid depositories?

Date: _____ Name: _____

Nature of the threats: _____

Additional comments: _____

END OF DOCUMENT 00 45 46

DOCUMENT 00 45 46
ANTI-TRUST QUESTIONNAIRE

DOCUMENT 00 52 13

AGREEMENT FORM – STIPULATED SUM

THIS AGREEMENT, entered into this _____ day of _____, 20____, by and between the COUNTY OF SAN MATEO, a Political Subdivision of the State of California, hereinafter called the "County", and _____, hereinafter called the "Contractor".

WITNESSETH that the Contractor and the County, in consideration of the mutual covenants, considerations and agreements herein contained, agree as follows:

STATEMENT OF WORK – The Contractor shall furnish all labor and materials and perform all work for:

**Prevent Self Harm and Ligature Project
San Mateo Medical Center, San Mateo CA 94403
Project No. P30F1**

in strict accordance with the Contract Documents.

TIME FOR COMPLETION – The work shall be commenced on a date to be specified in the Notice to Proceed issued by the County. Construction shall be completed within **five hundred forty-four (544) calendar days** defined as sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize for its intended use.

COMPENSATION TO BE PAID TO CONTRACTOR – The County will pay and the Contractor will accept in full consideration for the performance of the contract, subject to additions and deductions and procedures for payment as provided therein, the sum of _____ (\$_____) which is the Contractor's Bid. The Contract as defined in paragraph 1.1 of the General Conditions constitutes the sole agreement of the parties hereto relating to said work and correctly states the rights, duties, and obligations of each party as of the document's date. Any prior agreement, promises, negotiations, or representations between the parties not expressly stated in this document are not binding. All subsequent modifications shall be in writing.

PREVAILING WAGE RATES - In accordance with the provisions of Section 1770 of the Labor Code, the Board of Supervisors of the County of San Mateo has ascertained the prevailing rate of wages applicable to the work to be done, which prevailing wage rates have been established as indicated in the Notice to Bidders and are incorporated herein by reference.

The Contractor's attention is further directed to the following requirements of State Senate Bill SB 854 (Stat. 2014, chapter 28), effective January 1, 2015:

- (1) No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].
- (2) No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
- (3) This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

IN WITNESS WHEREOF, the parties hereto on the day and year first above written have executed this agreement in three counterparts, each of which shall, without proof or accounting for the other counterparts, be deemed an original thereof.

COUNTY OF SAN MATEO

A Political Sub-Division of the State of California

Attest:

By _____
President, Board of Supervisors

Michael Callagy, County Manager

Clerk of the Board of Supervisors

By _____
Contractor

END OF DOCUMENT 00 52 13

DOCUMENT 00 61 13.13
PERFORMANCE BOND FORM
(100% of Contract Price)

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That WHEREAS, the County of San Mateo, hereinafter designated as the "County," has awarded to _____ (CONTRACTOR'S NAME), hereinafter designated as "Principal," a contract dated _____ (CONTRACT AWARD DATE), hereinafter designated as the "Contract," which Contract is by this reference made a part hereof, for the work described as the **Prevent Self Harm and Ligature Project, located at San Mateo Medical Center, 222 West 39th Avenue San Mateo, CA 94403, Project No.P30F1.**

And WHEREAS, Principal is required to furnish a bond in connection with the Contract, guaranteeing the faithful performance thereof;

NOW THEREFORE, THESE PRESENTS WITNESSETH:

That the said Principal and the undersigned, (SURETY'S NAME), as corporate Surety, are held and firmly bound unto the County in the sum of

_____ Dollars (\$ _____)
lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such, that if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the County, with or without notice to the Surety, and during the life of any guarantee required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to Surety being hereby waived, on Principal's part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify, defend, protect, and hold harmless the County as stipulated in the Contract, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect.

No extension of time, change, alteration, modification, or addition to the Contract, or of the work required thereunder, shall release or exonerate Surety on this bond or in any way affect the obligation of this bond; and Surety does hereby waive

DOCUMENT 00 61 13.13
PERFORMANCE BOND FORM

notice of any such extension of time, change, alteration, modification, or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by the
Principal and Surety this _____ day of _____, 20_____.

Principal

Surety

Signature

Signature

Printed Name

Printed Name of California Agent Surety

Address of California Agent Surety

Telephone Number of California Agent Surety

(Affix Corporate Seal)

NOTE: Notary acknowledgement for Surety signatures and Surety's Power of Attorney and Certificate of Authority for Surety must be attached. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT 00 61 13.13

DOCUMENT 00 61 13.13
PERFORMANCE BOND FORM

DOCUMENT 00 61 13.16

PAYMENT BOND FORM

Contractor's Labor & Material Payment Bond
(100% of Contract Price)

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That WHEREAS, the County of San Mateo hereinafter designated as the "County," has awarded to _____ (CONTRACTOR NAME) hereinafter designated as the "Principal," a contract dated _____ (CONTRACTOR AWARD DATE) hereinafter designated as the "Contract," which Contract is by this reference made a part hereof, for the work described as the **Prevent Self Harm and Ligature Project, located at San Mateo Medical Center, 222 West 39th Avenue San Mateo, CA 94403 , Project No. P30F1.**

And WHEREAS, pursuant to law, the Principal is required, before entering upon the performance of the work, to file a good and sufficient bond with the body by whom the Contract is awarded to secure the claims to which reference is made in Sections 9550 to 9566 and 9100 to 9364 both inclusive, of the Civil Code of California.

NOW THEREFORE, THESE PRESENTS WITNESSETH:

That the said Principal and the undersigned _____,
(Surety's Name)

as corporate Surety, are held and firmly bound unto all laborers, material men and other persons referred to in said statutes in the sum of

_____ Dollars (\$ _____)

lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the above bonded Principal, contractor, person, company or corporation, or his or its sub-contractor, fails to pay any claimant name in Section 9100 of the Civil Code of the State of California, or amounts due under the Unemployment Insurance Code, with respect to work or labor performed by any such claimant, that the Surety on this bond will pay the same, in an amount not exceeding the aggregate sum specified in this bond, and also, in case suit is brought upon this bond, a reasonable attorney's fee, which shall be awarded by the court to the prevailing party in said suit, and attorney's fees to be taxed as costs in said suit.

DOCUMENT 00 61 13.16
PAYMENT BOND FORM

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies and corporations entitled to file claims under Section 9100 to 9364 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

This bond is executed and filed to comply with the provisions of the act of Legislature of the State of California as designated in the Civil Code, Sections 9550-9566 inclusive, and all amendments thereto.

Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change will be made which increases the total Contract price more than twenty percent (20%) in excess of the original Contract price without notice to the Surety, then, this obligation to be void, otherwise to remain in full force and virtue.

Correspondence relating to this bond shall be sent to the Surety at the address set forth below.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety this _____ day of _____, 20____.

Principal

Surety

Signature

Signature

Printed Name

Printed Name of California Agent Surety

Address of California Agent Surety

Telephone Number of California Agent Surety

(Affix Corporate Seal)

NOTE: Notary acknowledgement for Surety signatures and Surety's Power of Attorney and Certificate of Authority for Surety must be attached. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT 00 61 13.16

DOCUMENT 00 61 13.16
PAYMENT BOND FORM

DOCUMENT 00 61 16

BID BOND

(Bid Security Form)

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned,

_____, as Principal
("Principal"),

and _____, as Surety
("Surety"), are hereby held and firmly bound unto the County of San Mateo in the State
of California, as represented by the County Board of Supervisors, hereinafter called the
"Owner" in the sum of

_____ Dollars (\$ _____)
lawful money of the United States of America, for payment of which sum, well and truly
to be made, we hereby jointly and severally bind ourselves, our heirs, executors,
administrators, successors, and assigns.

The condition of the above obligation is such that, whereas the Principal has submitted
to the County a certain Bid, attached hereto and hereby made a part hereof, to enter
into a contract in writing for the **Prevent Self Harm and Ligature Project**, San Mateo
Medical Center, San Mateo, CA 94403, Project No. P30F1 in strict accordance with the
Contract Documents.

NOW, THEREFORE,

- a. If said Bid shall be rejected, or, in alternate
- b. If said Bid shall be accepted and the Principal shall execute and deliver a
contract in the Form of Agreement attached hereto and shall execute and deliver
Performance and Payment Bonds in the Forms attached hereto (all properly completed
in accordance with said Bid), and shall in all other respects perform the agreement
created by the Acceptance of said Bid.

Then, this obligation shall be void; otherwise, the same shall remain in force and
effect, it being expressly understood and agreed that the liability of the Surety for any
and all default of the Principal hereunder shall be the amount of this obligation as herein
stated.

The Surety, for value received, hereby stipulates and agrees that the obligation
of said Surety and its bond shall be in no way affected or impaired by any extension of
the time within which the County may accept such Bid and said Surety does hereby
waive notice of such extension.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In presence of:

(Individual Principal) (Affix
Corporate
Seal)

(Business Address)

By _____

Attest:

(Corporate Principal)

(Business Address)

By _____

(Affix
Corporate
Seal)

Attest:

(Corporate Surety)

(Business Address)

By _____

(Affix
Corporate
Seal)

The rate or premium on this bond is _____ per thousand.

Total amount of premium charge, \$ _____
(The above must be filled in by Corporate Surety.)

County of San Mateo – Department of Public Works
San Mateo Medical Center (SMMC)
SMMC Prevent Self Harm & Ligature Project No. P30F1
OSHPD No. S191567-41-00

(Note: If Bidder is providing a bid bond as its bid security, Bidder must use this form, NOT a surety company form.)

Bidder must attach Power of Attorney and Certificate of Authority for Surety and a Notarial Acknowledgement for all Surety's signatures. The California Department of Insurance must authorize the Surety to be an admitted Surety Insurer.

END OF DOCUMENT 00 61 16

DOCUMENT 00 62 23

**RECYCLING AND DIVERSION OF DEBRIS FROM CONSTRUCTION AND
DEMOLITION**

UNDER THE

COUNTY OF SAN MATEO, ORDINANCE NO. 4099, CHAPTER 4.105

AND THE

COUNTY OF SAN MATEO WASTE MANAGEMENT PLAN FORM

4.105.010 Definitions

For purposes of this chapter, the following definitions apply:

(a) “Construction and demolition debris” means and includes:

1. Discarded materials generally considered to be not water soluble and non-hazardous in nature, including but not limited to steel, copper, aluminum, glass, brick, concrete, asphalt material, pipe, gypsum, wallboard, and lumber from the construction or destruction of a structure as part of a construction or demolition project or from the renovation of a structure and/or landscaping, including rocks, soils, tree remains, trees, and other vegetative matter that normally results from land clearing, landscaping and development operations for a construction project;
2. Remnants of new materials, including but not limited to: cardboard, paper, plastic, wood, and metal scraps from any construction and/or landscape project.

(b) “Contractor” means any person or entity holding, or required to hold, a contractor’s license of any type under the laws of the State of California, or who performs (whether as contractor, subcontractor, owner-builder, or otherwise) any construction, demolition, remodeling, renovation, or landscaping service relating to buildings or accessory structures in the unincorporated area of San Mateo County.

(c) “Covered Project” means and includes any project which consists of one or more of the following:

1. Demolition work only, where the cost of the work exceeds \$5,000 as determined by the Building Official;

2. The renovation, remodel or addition to an existing structure, or the construction of a new structure where the cost of the work exceeds \$250,000, as determined by the Building Official;

3. Commercial, residential, or multi-family residential development, and any new structure that is equal to or greater than 2,000 square feet.

(d) “Designated recyclable and reusable materials” means and includes:

1. Inert solids

2. Wood materials, including any and all dimensional lumber, fencing or construction wood that is not chemically treated, creosoted, CCA pressure treated, contaminated or painted;

3. Vegetative materials, including trees, tree parts, shrubs, stumps, logs, brush or any other type of plants that are cleared from a site for construction or other use;

4. Metals, including all metal scrap such as, but not limited to, pipes, siding, window frames, door frames and fences;

5. Roofing materials including wood shingles and shakes as well as asphalt, stone and slate based roofing material;

6. Salvageable materials and structures, including, but not limited to doors, windows, fixtures, hardwood flooring, sinks, bathtubs and appliances;

7. Any other materials that the Building Official determines can be diverted due to the identification of a recycling facility, reuse facility, or market accessible from the County.

(e) “Inert solids” includes asphalt, concrete, rock, stone, brick, sand, soil and fines;

(f) “Salvage” means the controlled removal of materials from a covered project, for the purpose of reuse or storage for later reuse;

(g) “Structure” means anything constructed or erected. (Ord. 4099, 02/26/02)

4.105.020 Deconstruction and Salvage and Recovery

(a) Contractors are encouraged to make every structure planned for demolition available for deconstruction, salvage, and recovery prior to demolition; and to

recover the maximum feasible amount of salvageable designated recyclable and reusable materials prior to demolition.

(b) Recovered and salvaged designated recyclable and reusable materials from the deconstruction phase shall be counted towards the diversion requirements of this chapter. (Ord. 4099, 02/26/02)

4.105.030 Diversion Requirements

(a) One hundred percent (100%) of inert solids, and at least sixty five percent (65%) of the remaining construction and demolition debris tonnage shall be diverted.

(b) For each covered project, the diversion requirements of this chapter shall be met by submitting and following a “Waste Management Plan” that includes the following:

1. Deconstructing and salvaging all or part of the structure as practicable.

AND

2. Directing one hundred percent (100%) of inert solids to reuse or recycling facilities approved by the County. AND

3. Either:

a. Taking all mixed construction and demolition debris to the Mixed Construction and Demolition Debris Recycling facilities approved by the County and taking all sorted or crushed construction and demolition debris to approved facilities; OR

b. Source separating non-inert materials, such as cardboard and paper, wood, metals, green waste, new gypsum wallboard, tile, porcelain fixtures, and other easily recycled materials, and directing them to recycling facilities approved by the County and taking the remainder (but no more than 50% by weight or yardage) to a facility for disposal. In this option, calculations must be provided to show that 50% of construction and demolition debris (in addition to 100% of inert solids) has been diverted. (Ord. 4099, 02/26/02)

4.105.040 Information Required Before Issuance of Permit:

Every contractor shall submit a properly completed Waste Management Plan on a form prescribed by the County, as an integral part of the building or demolition permit application process for a covered project. The Waste Management Plan shall indicate the intended salvage, reuse, and recycling facilities, chosen from a list of facilities approved by the County, for all construction and/or demolition

debris from the project. Approval of alternative facilities or special salvage or reuse options may be requested of the Building Official. Approval by the Building Official, or designee, of the Waste Management Plan as complying with this chapter shall be a condition precedent to the issuance of any building or demolition permit for a covered project. (Ord. 4099, 02/26/02)

4.105.050 Administrative Fee

As a condition precedent to the issuance of any building or demolition permit for a covered project, the applicant shall pay to the County a fee as established by resolution to compensate the County for all expenses incurred in administering this chapter. (Ord. 4099, 02/26/02)

4.105.060 Reporting

(a) No later than thirty (30) days following the completion of a demolition project or construction project, the contractor shall, as a condition of final approval and for issuance of any certificate of occupancy, submit documentation to the County that demonstrates compliance with the requirements of this chapter.

(b) The documentation shall consist of photocopies of receipts and weight tags or other records of measurement or equivalent documentation from recycling companies, deconstruction contractors, and landfill and disposal companies. The contractor's approved Waste Management Plan shall be completed by recording and confirming the type of debris diverted and the facilities to which it was taken. The contractor shall sign the completed Waste Management Plan form to certify its accuracy as part of the documentation of compliance.

(c) Progress reports during construction may be required.

(d) All documentation submitted pursuant to this section is subject to verification by the County.

(e) It is unlawful for any person to submit documentation to the County under this section which that person knows to contain any false statements, including but not limited to false statements regarding tonnage of materials recycled or diverted, or to submit any false or fraudulent receipt or weight tag or other record of measurement. (Ord. 4099, 02/26/02)

4.105.070 Penalties and Enforcement

(a) Each violation of the provisions of this chapter shall constitute a misdemeanor and shall be punishable by imprisonment in the county jail for up to six (6) months, or by a fine of up to one thousand dollars (\$1,000), or both. Each day that a violation continues shall be deemed a new and separate offense.

(b) The Building Official shall have the authority to enforce this chapter as specified in section 9021 of the San Mateo County Building Regulations, including but not limited to the authority to order that work be stopped where any work is being done contrary to the provisions of this chapter. (Ord. 4099, 02/26/02)

END OF DOCUMENT 00 62 23

**See the next page for “The County of San Mateo Waste Management Plan”
fillable form.**



County of San Mateo

WASTE MANAGEMENT PLAN

Case/group number(s):

BLD _____ - _____

Project address:

Street: _____

City: _____

Zip Code: _____

Green Halo number(s):

WMP required because project is a:

- Residential Demolition
- Nonresidential New Construction
- Addition

Submit to:

County of San Mateo
Office of Sustainability
455 County Center, 4th Floor
Redwood City, CA 94063
Mon-Fri, 8:30 am-12:00 pm, 1:00 pm-4:30 pm

Information and support: 888-442-2666
www.smcsustainability.org/waste-reduction/construction-demolition

Section One: Permit Application

This Waste Management Plan (WMP) must be completed, submitted for review with a **\$95 administration fee**, and approved to obtain a building permit. Separate WMPs are required for demolition and construction at the same site unless the Building Department requires only one permit. Need for a WMP is at the discretion of the Building Official or designee.

Applicant's Name: _____ Owner's Name: _____

Phone Number: _____ Email: _____

Applicant is (please check one): Owner Architect Builder Owner/Builder Other _____

Contractor (if applicable): _____ Contact Phone Number: _____

Project Description: _____

Project Square Footage: _____ Estimated Completion Date: _____

Waste Management Requirements:

You are required to recycle or re-use all inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, and stone) and 65% of all construction and demolition debris.

I understand that I am required by San Mateo County Building Regulations Section 9210 - Adoption Of 2016 California Green Building Standards Code (Building Regulations) to salvage, reuse, or recycle **all inert solids** (asphalt, brick, concrete, dirt, fines, rock, sand, and stone) and **a minimum of 65%** of all construction and demolition debris (C&D). _____ (Initial)

I understand that failure to meet the requirements of the Building Regulations shall constitute a misdemeanor, and shall be punishable by imprisonment in the county jail for up to 6 months and/or a fine of up to \$1,000, calculated as a percentage of the required 65% diversion of C&D debris, and that the fine must be paid as a condition of final approval. _____ (Initial)

At the completion of this project, or more frequently if required, all weight tags or other equivalent documentation from salvage, recycling and waste facilities will be provided and I understand that I may not be issued my final inspection unless all original receipts and documentation are submitted to the County of San Mateo Office of Sustainability. _____ (Initial)

Recycling and waste facilities ask for the correct origin of the materials generated as they come through the scale house. These tons are reported to the State of California. I understand that I need to advise my debris box company, waste haulers, and my drivers that the materials generated on this project originated in Unincorporated County of San Mateo. _____ (Initial)

1) Deconstruction/salvage/reuse:

What materials will be salvaged/reused? _____

Deconstruction or salvage company (if applicable): _____

What materials will be reused on site? _____

How will this be documented? _____

2) Material transportation:

Will you be using a hauling company, debris box company or hauling the material yourself?

Hauler Debris Box Self-haul

If using a hauling or debris box company, which company? _____

Have they been notified that the diversion of 65% mixed debris and all insert solids is required? Yes No

3) Waste management plan:

Check the materials you anticipate generating and fill in the facilities that you plan to use.

Category	Material	√	Reuse, Recycling or Disposal Facility
Mixed C&D	Mixed Debris		
Inerts	Asphalt		
	Bricks		
	Concrete		
	Dirt		
	Other inert solids		
Source Separated	Cardboard		
	Metals		
	Wood		
	Roofing		
	Carpet		
	Drywall		
	Yard trimmings		
	Other		
Disposal	Waste		

The undersigned hereby agrees to comply with the Waste Management Plan as submitted and is the owner or authorized agent to sign for the owner of this project.

Applicant Signature _____ **Date** _____

County Approval: Approved Approved with comments Denied

All receipts, weight tags and documentation for salvage, recycling, and disposal must be submitted:

On completion of project Other _____

Office of Sustainability Approval: _____ Date: _____



County of San Mateo

WASTE MANAGEMENT PLAN

Case/Group Number(s):
BLD _____ - _____

Project Address:
Street: _____

City: _____

Section Two: Final Report Approval

Please complete, submit, and get this section approved by the Office of Sustainability, prior to obtaining final approval by the Building Department no later than 30 days after completion of the demolition or construction project. Please provide weight of materials in **tons**. If needed, please use the conversion table on the next page to convert cubic yards to tons.

This section must be completed and signed, and all receipts or other supporting documentation must be attached in order to receive final project approval.

Category	Date	Material/items	Name of facility debris was hauled to	Weight (Tons)	Volume (CU. YD.)
Mixed C&D					
Salvage/Reuse					
Inerts Asphalt, bricks, concrete, dirt, rock, sand, soil, stone					
Source Separated Cardboard, wood, metal, sheetrock, wire, carpet, yard trimmings					
Disposal (Waste)					

- All receipts or equivalent documentation for salvage, recycling, and disposal are hereby attached.
- This project has recycled all of the inert solids and at least 65% of all debris generated.

Applicant Signature _____ **Date** _____

County Approval: Approved Approved with Comments Fine Payment Required

Comments: _____

Fine Calculation: $1 - (\text{C\&D Diversion \% Achieved} \text{ ____} / 65\%) \times \$1000 = \$$ _____

Office of Sustainability Approval: _____ Date: _____

County of San Mateo

WASTE MANAGEMENT PLAN

Cubic Yards to Tons Conversion Table

Category	Material	Cubic Yards	Pounds	Tons
Mixed C&D	Mixed load C&D	1	500	0.25
Inerts	Asphalt	1	1380	0.69
	Bricks	1	3000	1.5
	Concrete	1	1860	0.93
	Dirt	1	2000	1
	Other inert solids	1	1240	0.62
Source Separated	Cardboard	1	100	0.05
	Metals	1	900	0.45
	Wood	1	300	0.15
	Asphalt roofing	1	1188	0.59
	Carpet	1	600	0.3
	Drywall	1	400	0.2
	Green waste	1	300	0.15
	Gravel	1	2600	1.3
Disposal	Waste	1	300	0.15

DOCUMENT 00 65 36
WARRANTY FORM

(Contractor's or Subcontractor's own letterhead)

WARRANTY GUARANTEE FOR THE:

Project Name: **Prevent Self Harm and Ligature Project**

Project No.: P30F1

Project/Facility Address: San Mateo Medical Center, 222 West 39th Avenue, San Mateo CA 94403

We, _____ (Contractor's name) hereby guarantees

(Scope of Contractor's Work) _____

_____ which Contractor has installed for the County of San Mateo for the above project

beginning _____ for _____ year(s) in accordance with the Contract Documents.

We agree to repair or replace to the satisfaction of the Owner any and all such work that may prove defective in workmanship or materials within that period, ordinary wear and tear and unusual abuse or neglect excepted, together with all other Work which may be damaged or displaced in connection with such Work. This Warranty includes labor and materials.

In the event of our failure to comply with the above-mentioned conditions within seven (7) calendar days after being notified in writing, we collectively and separately do hereby authorize the Owner to proceed to have the defects repaired and made good at our expense, and will pay the costs and charges therefore immediately upon demand.

I hereby certify that I am authorized to sign this document.

Date _____

(Signature of Contractor)

Print Name and Title

Date _____

(Signature of Subcontractor)

Print Name and Title
(Subcontractor must co-sign with Contractor)

Representative(s) to be contacted for service subject to terms of Contract:

NAME: _____

ADDRESS: _____

PHONE NO.: _____

END OF DOCUMENT 00 65 36

DOCUMENT 00 72 13

GENERAL CONDITIONS

1 THE CONTRACT 1

1.1 CONTRACT DESCRIPTION 1

1.2 CONTRACT DOCUMENTS 1

1.3 ERROR IN THE DOCUMENTS 2

1.4 SEPARATE CONTRACTS 2

1.5 CONTRACT TERMINATIONS 3

1.6 ALLOWANCES 4

1.7 DISPUTES 5

1.8 SEVERABILITY 5

1.9 HEADINGS 5

2 CONTRACT MODIFICATIONS 5

2.1 MODIFICATION OF CONTRACT DOCUMENTS 5

2.2 VERBAL INSTRUCTIONS 7

2.3 METHOD OF DETERMINING ADJUSTMENT 7

2.4 CONTRACTOR CLAIMS AND DISPUTES 8

2.5 DELAYS BEYOND CONTRACTOR'S CONTROL 9

2.6 HIDDEN CONDITIONS 9

2.7 HAZARDOUS MATERIALS 9

2.8 OVERHEAD AND PROFIT 9

2.9 MAINTAIN RECORDS 10

2.10 PROPOSAL REQUESTS 10

3 CONTRACTOR 11

3.1 DEFINITIONS 11

3.2 GENERAL 11

3.3 SUBCONTRACTS 11

3.4 PERSONNEL AND LABOR POLICY 12

4 OWNER 14

4.1 DEFINITION 14

4.2 GENERAL 14

4.3 THE DIRECTOR OF PUBLIC WORKS 14

4.4 OWNER'S CONSTRUCTION MANAGER 15

5 ARCHITECT 15

5.1 DEFINITION 15

5.2 GENERAL 15

6 PERFORMANCE OF THE WORK 16

6.1 DEFINITION 16

6.2 GENERAL 16

6.3 EXISTING CONDITIONS 18

6.4 ADJACENT FACILITIES 18

6.5 PERMITS	19
6.6 LAWS.....	19
6.7 EMERGENCIES.....	19
6.8 SUBMITTALS	20
6.9 SUBSTITUTIONS	20
6.10 CORRECTING WORK.....	21
6.11 TESTING.....	21
6.12 RECORD DOCUMENTS	22
6.13 OPERATING AND MAINTENANCE MANUALS	22
6.14 TRAINING TO OWNER/OWNER'S REPRESENTATIVE	23
7 TIME.....	23
7.1 DEFINITION OF OFFICIAL DATES	23
7.2 SUBSTANTIAL COMPLETION.....	23
7.3 LIQUIDATED DAMAGES	24
7.4 USE AND OCCUPANCY PRIOR TO SUBSTANTIAL COMPLETION	25
7.5 SCHEDULE	25
7.6 DETERMINATION OF WEATHER DELAYS.....	33
7.7 DELAY AND TIME EXTENSIONS.....	34
8 PAYMENTS	36
8.1 CONTRACT AMOUNT	36
8.2 CONTRACT AMOUNT BREAKDOWN - SCHEDULE OF VALUES	36
8.3 PROGRESS PAYMENTS.....	36
8.4 OWNER'S FAILURE TO ISSUE PAYMENT	37
8.5 PAYMENTS WITHHELD.....	37
8.6 FINAL PAYMENT AND RETENTION PAYMENT.....	38
9 INSURANCE.....	39
9.1 HOLD HARMLESS/INDEMNIFICATION.....	39
9.2 INSURANCE.....	39
9.3 FAILURE TO PROVIDE INSURANCE	41
10 GUARANTEES	41
10.1 REQUIRED GUARANTEES.....	41
10.2 REPAIR OF GUARANTEED WORK.....	41

DOCUMENT 00 72 13

GENERAL CONDITIONS

1 THE CONTRACT

1.1 CONTRACT DESCRIPTION

The Contract Documents form the entire Contract between the Contractor and the Owner. The Contract supersedes prior negotiation and representations, either written or oral.

1.2 CONTRACT DOCUMENTS

- A. The Contract Documents consist of the Notice to Contractors, Instructions to Bidders, Agreement, General Conditions, Special Provisions, Supplementary Conditions, Specifications, Drawings, Addenda, Revisions, Construction Change Directives, Change Orders (including Unilateral Change Orders), RFI Responses, Shop Drawings and other documents listed in the Agreement or included in the Project Manual, and written interpretations and instruction when issued in accordance with the provisions herein.
- B. The Contract Documents are complementary and what is required by anyone shall be as binding as if required by all. The Contract Documents are not necessarily complete in every detail. The Contract is to include all labor, materials, equipment and other items as necessary for the proper execution and completion of the work as specified or reasonably inferable as being necessary to produce the intended results in accordance with high quality industry standards.
- C. An item designated by reference to the number, symbol, or title of a specific standard such as a commercial standard, a Federal Specification, a Trade Association Standard or other similar standard, shall comply with the requirements in the latest revision thereof and any amendments or supplement thereto in effect on the date of the bid. The standards referred to shall have full force and effect as though printed in the Specifications.
- D. The County will arrange for the Contractor to have access to one set of reproducible Drawings. The Contractor may at his expense, reproduce the Drawings and Specifications as needed. All Drawings and Specifications and copies thereof are the property of the Owner. They are not to be used on other projects.
- E. For convenience, the Specifications may be arranged in sections and the Drawings may be arranged by system or otherwise. Such separation shall not be considered as the limit of Work required of any separate trade. The terms and

conditions of such limitations are wholly between the Contractor and his Subcontractors.

- F. In general, the Drawings will indicate dimensions, position, quantity and type of construction; and the Specifications will indicate quality and method. Work indicated in one but not the other shall be furnished as though fully set forth in both. Work not specifically marked, specified, or detailed shall be the same as similar work that is marked, specified, or detailed.
- G. The Project Manual is a collection of documents assembled for the convenience of the parties and usually includes, but is not limited to, the Notice to Contractors, Instructions to Bidders, General Conditions, Supplementary General Conditions, Special Provisions, Bid Documents, Agreement, and Specifications.

1.3 ERROR IN THE DOCUMENTS

- A. Should an error or conflict appear in the Contract Documents, or a conflict with the documents and actual conditions, the Contractor shall notify the Owner, Owner's Representative, and Architect at once, and the Architect will provide a response and/or issue instructions. If the Contractor proceeds with the work without a written response/instructions, he shall make good any resulting unacceptable work or consequences.
- B. Whenever the documents could be construed to be ambiguous or conflicting at the time of Bid, the Contractor is deemed to have included the cost of the more expensive material, method, or requirement in the Contract Amount.
- C. Figured dimensions shall govern over scaling and large scale details shall govern over smaller scale details.

1.4 SEPARATE CONTRACTS

- A. The Owner reserves the right to let other contracts in connection with this Project. Contractor shall afford other County contractor(s) reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs as required by the Owner.
- B. If any part of Contractor's Work depends for proper execution or results upon the work of another contractor, the Contractor shall inspect and measure the work of other contractor and promptly report to the Owner all defects or discrepancies that render it unsuitable for such proper execution or results. Contractor's action of proceeding with his work shall constitute his acceptance of the prior work as fit and proper for the reception of his work.
- C. The Contractor and its respective Subcontractors shall repair any damage he may do to another County contractor's work to the Owner's satisfaction.

1.5 CONTRACT TERMINATIONS

A. Owner's Right to Terminate Contract for Cause

If Contractor should be adjudged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver by the Surety should be appointed on account of his insolvency, or if he should fail to supply enough properly skilled workmen or materials to maintain the schedule, or if he should fail to diligently and expeditiously prosecute the Work, or if he should fail to commence the Work on the Project site per the Owner's Notice to Proceed, or if he should fail to make prompt payments to Subcontractors or for materials or labor, or persistently disregard laws, ordinances or the instructions of the Owner or Architect, or otherwise breach any provision of the Contract between the Contractor and Owner, the Owner may without prejudice to any right or remedy the Owner may have and after giving the Contractor seven (7) calendar days written notice, terminate the Contract or terminate the Contractor's right to proceed with the Work and take possession of the premises and of all materials, tools and equipment thereon and finish the Work by whatever method the Owner may deem expedient. In such case, Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Amount shall not exceed the expense of finishing the Work, including compensation for additional managerial and administrative services, such excess amount of the Contract shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner.

B. Owner's Right to Terminate Contract for Convenience

The Owner reserves the right to terminate this contract at any time. Contractor shall be compensated on the basis of the reasonable value of the portion of Work completed as prorated against the Contract Amount or shown as a separate price and the cost incurred for portions of the Work performed but not completed. The total payments to contractor shall not exceed the Contract Amount.

C. Contractor's Right to Terminate Contract

Except as provided by paragraph 1.5.D Emergency Termination, if the Work should be stopped by the Owner, or an order of the court, or other public authority for a period of six months, through no act or fault of the Contractor or of anyone employed by him, then the Contractor may, upon twenty-one (21) days written notice to the Owner, terminate this Contract and recover from the Owner the amount owed under the Contract for the portion of Work, if any, which was completed.

D. Emergency Termination

This Contract is subject to termination as provided by Section 4410 and 4411 of

the Public Contracts Code of the State of California, being portions of the Emergency Termination of Public Contracts Act of 1949. Said Sections read as follows:

"Sec. 4410. TERMINATION OF CONTRACT FOR PUBLIC WORK IN EVENT OF NATIONAL EMERGENCY. In the event a national emergency occurs, and public work, being performed by Contract, is stopped, directly or indirectly, because of the freezing or diversion of materials, equipment, or labor, as the result of an order or of a proclamation of the President of the United States, or of an order of any federal authority, and the circumstances or conditions are such that it is impracticable within a reasonable time to proceed with a substantial portion of the Work, then the public agency and the Contractor may, by written agreement, terminate said Contract."

"Sec. 4411. INCLUSION OF TERMS AND CONDITIONS OF TERMINATION OF CONTRACT IN AGREEMENT: COMPENSATION TO CONTRACTOR. Such an agreement shall include the terms and conditions of the termination of the Contract and provision for the payment of compensation or money, if any, which either party shall pay to the other or any other person, under the facts and circumstances in the case."

"Compensation to the Contractor shall be determined on the basis of the reasonable value of the Work done, including preparatory Work. As an exception to the foregoing, in the case of any fully completed separate item or portion of the work for which there is a separate Contract price, the Contract price shall control. The parties may in any other case adopt the Contract price as the reasonable value of the Work or any portions thereof."

1.6 ALLOWANCES

- A. The Contractor shall include in the Contract Amount all allowances stated in the Contract Documents. Items or services covered by these allowances shall be supplied as the Owner may direct.
- B. Allowances for material and equipment shall cover the cost to the Contractor, less any applicable trade discount, delivered at the site, and all applicable taxes. The Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses required to complete the Work shall be included in the Contract Amount and not in the allowance.
- C. Whenever the cost of the material, equipment or service is more than or less than the allowance, the Contract Amount shall be adjusted by the procedure in Section 2, Contract Modifications.

1.7 DISPUTES

Should any dispute including breach, arise out of or relate to this Contract the Contractor shall continue to perform the Work in accordance with the Contract Documents and the Owner and Contractor agree to pursue resolution of the disagreement by whatever means available. Neither a dispute resolution process, the resolution, nor lack of resolution shall delay, hinder, or alter the completion of the Work in accordance with the undisputed portion of the Contract Documents and in accordance with the Owner's direction to Contractor regarding disputed portions of the Contract.

1.8 SEVERABILITY

In the event that any provision or any part of a provision of this Contract shall be finally determined to be superseded, invalid, illegal or otherwise unenforceable pursuant to applicable laws by an authority having jurisdiction, such determination shall not impair or otherwise affect the validity, legality, or enforceability of the remaining provisions or parts of provisions of this Contract, which shall remain in full force and effect as if the unenforceable provision or part were deleted.

1.9 HEADINGS

The headings of any section or provision of this Contract are for convenience only and shall not be deemed to limit, restrict or alter the content, meaning or effect thereof.

2 CONTRACT MODIFICATIONS

2.1 MODIFICATION DOCUMENTS

- A. The Owner, without invalidating the Contract and without consent of surety, may accomplish changes in the Work within the general scope of the Contract consisting of additions, deletions, additional instructions, or other revisions, to the Contract Documents, and where applicable, the Contract Amount and/or the Contract Time being equitably adjusted accordingly. All such changes in the Work may be accomplished by Owner's Instructions, Architect's Supplemental Instructions, a Construction Change Directive, a Change Order (including a Unilateral Change Order), as may be applicable in accordance with the provisions of the Contract. The Contract Amount and/or the Contract Time may be changed only by a Change Order. Contractor agrees to promptly proceed with changes in the Work according to the respective form of documentation issued. All changes to the Work and all Contractor requests for additional compensation shall be resolved in accordance with this Section 2, Contract Modifications.
- B. A Change Order is a written order from the Owner ordering a change in the Work. Upon receipt of a Change Order, the Contractor shall promptly proceed with the

- Work as changed. The Contractor will not delay the Work for any reason. Within ten (10) working days after receiving a Change Order and prior to or simultaneously with proceeding with the change in the Work, Contractor shall advise the Owner and Architect of Contractor's inability to proceed with the Work, and shall state in writing. Proceeding with the Work as changed without submitting a notice to Owner or Owner's Representative indicates Contractor's full acceptance of the Change Order including the Contract Amount and/or Contract Time.
- C. The signature of the Owner and Contractor on the Change Order indicates their final and conclusive acceptance of the stated terms and provisions as full compensation for the change to the Work. In the event the Owner and Contractor do not agree upon an adjustment to the Contract Amount and/or Contract Time resulting in a Change Order, the Owner may issue a Unilateral Change Order. A Unilateral Change Order is signed by the Owner and issued to the Contractor authorizing an adjustment in the Contract Amount and/or Contract Time as the Owner deems equitable. A Unilateral Change Order does not require the Contractor's signature, but may be signed by the Contractor and returned to the Owner.
- D. If Contractor is in disagreement with the terms or provisions of a Unilateral Change Order, the Contractor shall give the Owner and Architect written notice of his disagreement, the basis thereof, and supporting documentation within ten (10) working days of receiving the Unilateral Change Order. Such notice of disagreement does not excuse performance by the Contractor of all obligations under the Contract Documents and the Contractor shall proceed with the Work including the Work involved with the disagreement. Failure to present such notice of disagreement constitutes a waiver by the Contractor of any entitlement to additional cost or time, or subsequent claim.
- E. The Owner and Architect have the authority to issue Owner's instructions or Architect's Supplemental Instructions respectively to the Contractor which may require minor changes in the Work not involving an adjustment in the Contract Amount or an extension of Contract Time. If Contractor believes an adjustment of Contract Amount or Contract Time is justified, Contractor shall not incur additional cost or delay and notify the Owner or Architect in writing within 24 hours of upon receipt.
- F. A Construction Change Directive is a written document signed by the Owner and issued to the Contractor to perform as specified. The Contractor shall immediately comply with and perform to the Construction Change Directive. If the Contractor believes an adjustment of Contract Amount or Contract Time is justified, a request may be submitted in accordance with Section 2.4, Contractor Claims. If the Owner concurs with the Contractor a Change Order will be issued.

2.2 VERBAL INSTRUCTIONS

Contractors shall not act or rely upon verbal instructions. If a verbal instruction is provided on site to the Contractor, Contractor shall document such verbal instruction through a confirming RFI. No work will be accepted by the Owner that differs from the Contract Documents as modified in writing.

2.3 METHOD OF DETERMINING ADJUSTMENT

- A. An adjustment to the Contract Amount or Contract Time pursuant to a Change Order resulting from a Construction Change Directive, Claim, or other provision herein shall be determined in one or more of the following ways at the Owners discretion.
1. By negotiation based upon Contractor's estimate. The estimate shall include quantities of materials and man hours, and a breakdown of cost showing labor, materials, profit, overhead, and all other items of cost. Labor rates for Change Orders shall be agreed upon between the Owner and the Contractor within thirty (30) calendar days of Contract Award date. General requirements, labor burden, project supervision, project management and facilities are not allowed. Overhead and profit shall not exceed the percentages specified in the Contract Documents.
 2. By unit prices stated in the Contract or subsequently agreed upon.
 3. By acceptance of a lump sum price proposal of Subcontractor to Contractor.
 4. By determination of the Owner and issued unilaterally by a Unilateral Change Order.
- B. If the adjustment is not determined by the above methods prior to the Contractor starting Work pursuant to the Change Order, Contractor shall proceed with the Work and keep daily accurate records of the labor hours, materials, and other items of cost used in the performance of the changed Work. Copies of the records shall be given to the Owner or Owner's Representative daily. Contractor shall present at such time and in such form as Owner may prescribe, an itemized accounting together with appropriate supporting data as may be required by Owner to fully substantiate the cost of the changed Work. Owner shall consider such accounting in its determination of equitable adjustment. Overhead and profit shall not exceed the percentages specified in the Contract Documents.
- C. Extension of Contract Time will be granted only to the extent that the time required to complete the Work as changed or delayed extends the schedule critical path beyond the contract completion date. If changes or delays do not extend the critical path of the schedule beyond the contract completion date, there will be no

contractor entitlement to extended or additional home office expenses. Float, as used in this agreement, is the sum of the amount of time available to a task before the task becomes critical and the amount of time between the scheduled completion date and the contract completion date. Float may be used in the order needed by either the Owner or the Contractor.

2.4 CONTRACTOR CLAIMS AND DISPUTES

- A. If the Contractor wishes to request an adjustment in the Contract Amount or Contract Time, other than pursuant to a Change Order or Construction Change Directive, Contractor shall give the Owner and Architect a written Notice of Claim.
- B. Contractor shall file with the Owner any written Claim, including the documents necessary to substantiate it, on or before Substantial Completion, but no later than the day of Contractor's submittal of final payment on the Contract.
- C. The Notice of Claim shall be given by the Contractor to the Owner before conditions occur which are the basis for the Claim, except in an emergency endangering life or property in which case the Contractor should proceed in accordance with Section 6.7, Emergencies. Failure to present such Notice of Claim constitutes a waiver of such Claim.
- D. Notices for claims or disputes are valid only if written and shall be a document issued for the sole purpose of notification and titled clearly "Notice of (specify category i.e., delay) Claim." A separate written notice is required for each subject and issue.
- E. Written notice shall be deemed to have been duly served if delivered in person to the individual to whom it is addressed, or if sent by certified mail to the address specified in the Contract Documents as may be revised in writing.
- F. The Contractor shall continue to perform its Work under the Contract and shall not cause a delay in the Work during any dispute, claims definition, negotiation, mediation, or arbitration proceeding, except by written agreement by the Owner.
- G. The adjustment to the Contract Amount or Contract Time, if any, as the result of a settled claim, shall be determined and issued in accordance with this Section 2, Contract Modifications.
- H. All procedures for Claims and Disputes resolution shall be duly processed pursuant to the California Public Contract Code, Division 2, Part 1, Chapter 9 Sections 9201 – 9204.
- I. The attention of the Contractor is drawn to Government Code Section 12650, et seq. regarding penalties for false claims.

2.5 DELAYS BEYOND CONTRACTOR'S CONTROL

- A. If the Contractor is delayed at any time in the progress of the Work by acts or neglect of the Owner or by any separate contractor employed by Owner, or by labor disputes, fire, unusual delays in transportation, unusually adverse weather conditions, unavoidable casualties or by any other unforeseeable cause of delay beyond the Contractor's control, which the Owner decides justifies the delay, then the Contract Time may be extended for such reasonable time as the Owner in his discretion may decide. Contractor's Claim for extension of Contract Time shall be made in writing to the Owner in accordance with Section 2.4, Contractor Claims. Only one Claim is necessary in the case of continuing delay.
- B. Unusually adverse weather conditions for the purposes of this Project are agreed to be work days lost from weather or the effects of weather greater than the number of lost days specified in Section 7.5, Schedule.

2.6 HIDDEN CONDITIONS

Should concealed or unknown conditions be encountered in the performance of the Work below the surface of the ground or in an existing structure be at variance with the conditions indicated by the Contract Documents, or differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, the Contract Amount and/or Contract Time shall be equitable adjusted as provided herein upon Claim by Owner or Contractor. Contractor Claims shall be in accordance with Section 2.4, Contractor Claims.

2.7 HAZARDOUS MATERIALS

Asbestos or other hazardous material may be present in County buildings or on County property. Asbestos is typically in the form of pipe lagging, fire proofing, floor tiles, mastic, and plaster. Soil may be contaminated by petroleum products or other substances. In the event any suspected asbestos or other hazardous material is encountered during construction that may be disturbed by the Work, the Contractor shall stop immediately and notify the County. The Contractor and all Subcontractors shall instruct their employees of the type and location of the most likely forms of hazardous material to be encountered and of the procedure to be taken if encountered. Contractor will be responsible for the mitigation and abatement of the hazardous material upon authorization of Owner. All Claims for adjustment in time or money shall be processed in accordance with Section 2.6, Hidden Conditions.

2.8 OVERHEAD AND PROFIT

- A. Adjustments to the Contract Amount due to changes in the Work or any other reason, shall include overhead and profit as follows:

1. Contractor's overhead and profit on the direct cost of Work (labor, material, and equipment) performed by his forces and all Subcontractors shall be a total sum not exceeding twenty percent (20%) in aggregate of such costs.
2. Contractor's overhead and profit on the direct cost of Work (labor, material, and equipment) performed by Subcontractors shall be a total sum not exceeding ten percent (10%).
3. Subcontractor's overhead and profit on the direct cost of the Work (labor, material, and equipment) performed by Subcontractor shall be a total amount not exceeding fifteen percent (15%). Subcontractor overhead and profit will be allowed for one tier only.
4. Bonds and Insurance shall not exceed one percent (1%) of the sum of the direct cost of the work, the Subcontractor's overhead and profit, and the Contractor's overhead and profit.
5. Changes to the Work ordered by the Architect or Owner which decrease the Contract Amount shall include overhead and profit in accordance with the above provisions. Value engineering revisions initiated by the Contractor and accepted by Owner which decrease the Contract Amount shall be at cost only.
6. The "direct cost of the Work" is considered to be the cost of labor, material, and equipment incorporated into the construction. Supervision and administration of the work, changes, or claims shall not be included in direct cost.

2.9 MAINTAIN RECORDS

Contractor and Subcontractor shall maintain records, in accordance with generally accepted accounting principles, relating to costs of changes to the Work or Claims for 4 years after the final completion. The Owner will have the right to audit these records at any time up to 4 years after completion of the Project and recover from the Contractor or Subcontractor any amount paid but not substantiated by audit.

2.10 PROPOSAL REQUESTS

Contractor is required to provide preliminary estimates using their best judgment of time and cost impact of potential changes to the Project as requested by the Architect and/or Owner. Estimates shall be provided to the Architect and Owner within 10 working days of receiving the Proposal Request. Contractor will be responsible for any cost increase or schedule impact resulting from Contractor's failure to respond within the allowed time.

3 CONTRACTOR

3.1 DEFINITIONS

- A. The term Contractor, as used herein, is the person or organization identified as such in the Agreement, and is referred to as if singular and masculine and includes his authorized representatives.
- B. The term Subcontractor, as used herein, includes only those persons or organizations having a direct Contract with the Contractor to perform a portion of Contractor's Work.

3.2 GENERAL

- A. Contractor agrees to perform all Work required by the Contract Documents.
- B. All Work shall be done in accordance with the best practices of the various trades and/or suppliers and highest industry standards.
- C. The Contractor shall keep on the Project site during the progress of the Work a competent superintendent satisfactory to the Owner. The Superintendent shall not be changed except with the consent of the Owner. The Superintendent shall represent the Contractor and all directions given to him shall be as binding as if given to the Contractor.
- D. It is the Contractor's responsibility to diligently prosecute the Work, using his best skills and attention, and the most appropriate techniques and equipment that are required to provide a finished product in compliance with the Contract requirements. Contractor shall insure that no Work is done that does not comply with the Contract Documents.
- E. The Contractor shall attend a preconstruction meeting, weekly progress meetings and other meetings as necessary to accomplish the Work and administer the provisions of the Contract.
- F. Contractor shall submit to Owner a daily record of Contractor's activity. Such record shall be delivered to Owner's Representative daily for previous day's activity and shall include Project name, date, weather, names of Subcontractors, count of personnel by company, material deliveries, description and location of activity and events. The record of daily activity shall not be used as a Notice to Owner.

3.3 SUBCONTRACTS

- A. The Contractor shall not be permitted to substitute any person or organization for

any Subcontractor, person or organization listed by him in his bid without the prior, written consent of the Owner, as provided for in the California Public Contract Code, Division 2, Part 1, Chapter 4, Section 4017.

- B. In addition to the information required in Division 00 Bidding Documents regarding Subcontractors, the Contractor, after execution of the Contract but prior to execution of a subcontract, shall submit the following information on each Subcontractor: name, address, and nature of Subcontractor's work, Subcontract Amount, and all other information the Owner deems relevant. The Contractor shall not Contract with any such proposed Subcontractor or entity to whom the Owner objects.
- C. Contractor shall bind every Subcontractor and every Subcontractor agrees to be bound by the terms of the Contract Documents insofar as applicable to their portions of the Work. The Contractor shall be responsible for the acts and omissions of Subcontractors.
- D. Contractor agrees to pay to each Subcontractor promptly upon receiving payment from Owner.
- E. Neither the acceptance of the Subcontractor nor any other act of the Owner, nor anything contained in any contract document is to be construed as creating any contractual relation between the Owner and any Subcontractor.

3.4 PERSONNEL AND LABOR POLICY

- A. Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ any unfit person or anyone not skilled in the work assigned to them. The Contractor shall be responsible to the Owner for the acts and omissions of its employees and other persons performing work for the Contractor.
- B. No person shall be excluded from participation in, denied benefits of, or be subject to discrimination under this Contract on the basis of their race, color, religion, national origin, age, sex, sexual orientation, pregnancy, childbirth or related conditions, medical condition, mental or physical ability, or veteran's status. Contractor shall ensure full compliance with federal, state and local laws, directives and executive orders regarding non-discrimination for all employees and subcontractors under this Contract.

Violation of the non-discrimination provisions of this Contract shall be considered a breach of this Contract and subject the Contractor to penalties, to be determined by the County Manager, including but not limited to: i) termination of this Contract; ii) disqualification of the Contractor from bidding on or being awarded a County contract for a period of up to 5 years; iii) liquidated damages of \$2,500 per violation; iv) imposition of other appropriate contractual and civil remedies and

sanctions, as determined by the County Manager.

To effectuate the provisions of this paragraph, the County Manager shall have the authority to: i) examine Contractor's employment records with respect to compliance with this paragraph; ii) set off all or any portion of the amount described in this paragraph against amounts due to Contractor under the Contract or any other Contract between Contractor and County.

Contractor shall report to the County Manager the filing by any person in any court of any complaint of discrimination or the filing by any person of any and all charges with the Equal Employment Opportunity Commission, the Fair Employment Housing Commission or any other entity charged with the investigation of allegations within 30 calendar days of such filing, provided that within such 30 calendar days such entity has not notified Contractor that such charges are dismissed or otherwise unfounded. Such notification shall include the name of the complainant, a copy of such complaint and a description of the circumstance. Contractor shall provide County with a copy of its response to the complaint when filed.

For contracts over \$5,000, with respect to the provision of employee benefits, Contractor shall comply with the County Ordinance which prohibits contractors from discriminating in the provision of employee benefits between an employee with a domestic partner and an employee with a spouse. See Document 00 7373 Supplemental Conditions, Equal Benefits Compliance Ordinance No. 4324, Chapter 2.84.

- C. Contractor shall ensure equal employment opportunity based on objective standards of recruitment, selection, promotion, classification, compensation, performance evaluations, and management relations, for all employees working on the Project. Contractor's affirmative action policies shall be made available to Owner upon request. See Document 00 45 36.01 Equal Opportunity Requirements, Certification of Compliance with Laws Prohibiting Discrimination.
- D. It is the policy of the Owner that Contractors on public Projects employ their workers from the local labor market whenever possible. Consistent with that policy, the Contractor is requested to employ his workers from the local labor market. Local labor market within the meaning of this section is defined as the labor market within the geographical confines of the County of San Mateo, State of California.
- E. The Contractor shall forfeit, , as per the San Mateo County Office of Labor Standards and Enforcement (OLSE) and/or the State of California Department of Industrial Relations (DIR) penalties for each laborer, workman, or mechanic employed in the execution of the Contract by Contractor, or by any Subcontractor under Contractor, upon any of the Work performed for the Contract, for each calendar day during which said laborer, workman, or mechanic is required or

permitted to labor more than eight (8) hours in violation of the provisions of the California Labor Code, Division 2, Part 7, Chapter 1, Article 3, Section 1810.

- F. Apprenticeship Program: Contractor shall comply with the provision of California Labor Code, Division 2, Part 7, Chapter 1, Article 2, Section 1777.5.
- G. The Contractor shall comply with the provisions of the California Labor Code, Division 2, Part 7, Chapter 1, Article 2, Section 1776, and the regulations implementing it in Title 8 of the California Administrative Code. The Contractor shall be responsible for compliance by his Subcontractors. A certified copy of all weekly payroll records shall be furnished upon request of the Owner, the Division of Labor Standards Enforcement, or the Division of Apprenticeship Standards of the Department of Industrial Relations.
- H. Payrolls shall contain the full name, address, and social security number of each employee, his correct classification, rate of pay, daily and weekly number of hours worked, itemized deductions made and actual wages paid. They shall also indicate apprentices and ratio of apprentices to journeymen.
- I. The penalties specified in Subdivision (h) of Labor Code Section 1776 for noncompliance with the provisions of Section 1776 may be deducted by the County from any moneys due or which may become due to the Contractor.

4 OWNER

4.1 DEFINITION

The Owner is the person or organization identified as such in the Agreement and is referred to as if singular in number and masculine in gender and includes his authorized representatives. The Owner may be the County of San Mateo, sometimes referred to as "The County".

4.2 GENERAL

- A. The Owner may furnish information after the bid date and not included in the Contract Documents in the form of drawings, reports, survey data, utility locations, plans of existing facilities and such other information. This information is not part of the Contract Documents.
- B. The Owner shall receive copies of all correspondence, notices, approved shop drawings, test reports and such material pertinent to the Contract. The Owner shall have access to the Work at all times.

4.3 THE DIRECTOR OF PUBLIC WORKS

The Director of Public Works for the County of San Mateo or his duly appointed

representative is the duly appointed agent for the Owner and as such is empowered to act for the Owner in all matters as stated in the Contract Documents or as provided by law.

4.4 OWNER'S CONSTRUCTION MANAGER

- A. The Owner may engage a Construction Manager as an Owner's Representative for the Project. The Owner's Construction Manager shall receive copies of all communications regarding the Project, have full access to the Work, and be kept informed of all actions taken by the Contractor.
- B. The Owner's Construction Manager shall not interpret the plans, coordinate the Work, order changes in the Work, supervise the workmen, or perform any duty which is the responsibility of the Architect or the Contractor.

5 ARCHITECT

5.1 DEFINITION

For the purpose of this Contract, the Architect is identified in the Project Manual. The term "Architect" is the individual, partnership, corporation, joint venture, or any combination thereof, who will have the rights and authority assigned to the Architect in the Construction Documents. The Term Architect means the County's Architect on this Project or the Architect's authorized representatives and consultants. Nothing contained in the Contract Documents shall create any contractual relationship between the Architect and the Contractor.

5.2 GENERAL

- A. The Architect and the Construction Manager will provide general administration of the Contract between Owner and Contractor.
- B. The Architect will have authority to act on behalf of the Owner to the extent provided in the Contract Documents. The Owner's instructions to the Contractor may be issued through the Architect.
- C. The Architect shall at all times have access to the Work. The Contractor shall provide facilities for such access so the Architect may perform his functions under the Contract Documents. The Architect will make periodic visits to the site to familiarize himself with the progress and quality of the work and to determine if the work is proceeding in accordance with the Contract Documents. Architect will endeavor to guard the Owner against defects and deficiencies in the Work.
- D. The Architect will be the interpreter of the requirements of the Contract Documents and the judge of the Contractor's performance thereunder. The Architect will, within ten (10) working days, render interpretations or answers to questions

submitted by Contractor. All interpretations and decisions of the Architect shall be consistent with the intent of the Contract Documents. In Architect's capacity as interpreter and judge he will exercise his best efforts to insure faithful performance by all parties of the Contract. The Architect's decision in matters relating to esthetic effect will be final.

- E. The Architect will review submittals, samples, adjustments to the Contract, applications for payment, written guarantees, operation and maintenance manual and other documents required by the Contract.

6 PERFORMANCE OF THE WORK

6.1 DEFINITION

- A. The term "Work" as used herein is all of the Contractors obligations under the Contract including, but not limited, to providing all labor, material, equipment and services indicated by the Contract Documents, as-built drawings, punchlist, inspections and approvals required or necessary for occupancy, and guarantees.
- B. The term "Project" is the total construction planned or contemplated by the Owner of which the Work may be the whole or a part. The Owner may perform or contract for other work on the Project site during the progress of the Work.

6.2 GENERAL

- A. The Contractor shall provide, maintain and remove upon completion of the Work, all tools, machinery, equipment, temporary rigging, scaffolding, hoisting equipment, rubbish chutes, barricades around openings and excavation, ladders between floors, fences around buildings, and all other items as required for safe completion of the Work, whether specifically designated or not and shall conform to all requirements in regard to operation, safety, and fire hazards of State and local authorities and of underwriters.
- B. Deliver all materials and equipment in the manufacturer's original sealed, labeled containers and protect items against moisture, rust, dust, tampering, or damage.
- C. Place all materials and equipment orders in time to avoid job delay or hindrance. Schedule deliveries to coincide with the construction schedule so that materials and equipment are promptly installed upon delivery.
- D. Except as specifically noted otherwise, the installation and/or maintenance directions provided by the manufacturer shall be followed for all materials and equipment.
- E. All materials and equipment shall be new, unless specifically marked otherwise.

- F. All materials and equipment not conforming to the Contract Documents shall be rejected and shall be immediately removed from the site of the Work.
- G. All utilities and services required by the Contractor including electrical power, water, temporary telephones, temporary sanitary facilities, and temporary heat as required for the proper installation of materials and the completion of the Work shall be provided by Contractor.
- H. Shut down of utilities for any reason or duration shall be subject to approval by the Owner. The Owner requires a minimum notice per Document 00 35 13.19 Special Project Procedures for a utility shut down. When shut-downs of 30 minutes or more are required, the Contractor shall provide alternate service for normal occupancy requirements. Utility shut-downs shall be scheduled during non-business hours.
- I. Prior to ordering materials, the Contractor shall verify all measurements, material handling pathway and logistical dimensions at the site and shall be held responsible for their accuracy. No extra compensation will be allowed for differences between actual measurements and the dimensions shown on the Drawings.
- J. Fences, office facilities, enclosures, storage sheds, etc., required by the Contractor in the performance of the Work shall be located where approved by the Owner.
- K. The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with any materials or equipment.
- L. During the progress of the Work, Contractor shall keep the premises orderly and safe and free from accumulation of waste materials and rubbish.
- M. At the completion of the Work, Contractor shall remove all waste, surplus materials, and rubbish and shall clean all surfaces, removing all extraneous paint, mortar, dust, and stains, leaving the Work bright, clean and polished.
- N. The project is not exempt from any Federal, State or local taxes.
- O. Royalty and License Fees incidental to the use of any patented material, device or process shall be paid by the Contractor and in the event of a Claim of alleged infringement of patent rights, the Contractor shall save the Owner free and harmless from loss on account thereof; and also defend, at his own expense, all suits that may be brought in such connection.
- P. Contractor shall continuously maintain adequate protection of all Work and shall protect the Owner's property from damage or loss arising in connection with this

Contract.

- Q. Precaution shall be exercised at all times for the protection of persons (including Contractor's and Owner's employees) and property. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery, equipment and all hazards shall be guarded or eliminated in accordance with the safety provisions of the latest safety orders of the State of California: California Code of Regulations, Title 8, Construction Safety Orders (see Department of Industrial Relations at: <https://dir.ca.gov>), the California Occupational Safety and Health Administration (CAL/OSHA) Safety Orders (at <https://dir.ca.gov/dosh/>), and CAL/OSHA and Statewide Industry Guidance on COVID-19 (at <https://dir.ca.gov/dosh/coronavirus/Health-Care-General-Industry.html>).
- R. All materials and workmanship shall be subject to inspection, examination, test, and acceptance by the Owner at all times during manufacture and construction and at all places where such manufacture and construction occurs.

6.3 EXISTING CONDITIONS

- A. The Contractor by executing the Contract represents that he has visited the site and familiarized himself with the local conditions under which the Work is to be performed and has correlated his site observations with the requirements of the Contract Documents.
- B. The contractor shall carefully study and compare the Contract Documents and existing conditions and dimensions and the connection of the Work to existing conditions and shall report to the Architect any error, conflict, inconsistency, omission, or any variance with laws, ordinances, codes, rules or regulations bearing on the Work. Contractor shall report such conditions to the Architect in writing at such time as to allow at least ten (10) working days for a response with no delay to the Work. All necessary changes shall be accomplished in accordance with Section 2, Contract Modifications.

6.4 ADJACENT FACILITIES

- A. The Contractor shall provide adequate protection for all parts of the Project site, and adjacent property, its improvements and its occupants throughout the Work. All damage done to existing property shall be repaired or replaced at the Contractor's expense and determined to be acceptable by the Architect and Owner.
- B. Work shall be executed in careful, orderly manner, with the least possible disturbance to public and occupants of the area.
- C. The Owner will continue to use adjacent areas of the facilities. Contractor shall take care to disrupt the Owner as little as possible. Contractor shall provide legal

and safe access to all facilities at all times. In order to facilitate use of adjacent facilities Owner may order Contractor to alter or temporarily cease operations.

6.5 PERMITS

- A. It shall be the responsibility of the Owner to obtain and pay for all permits, licenses, certificates, approvals, utility connections and services necessary for the proper execution and completion of the Work.
- B. All fees which are for temporary approvals or services, such as those which are necessary for construction procedures, shall be paid by the Contractor.
- C. In the event the Special Provisions require the Owner to pay any fee, the Contractor shall notify the Owner in writing, twenty (20) working days in advance of a required fee payment.
- D. It is the policy of the County to cooperate with State, County and City officials in regard to the construction of this Project, and it is the responsibility of the Contractor and all his Subcontractors to meet the requirements of government officials having responsibility for inspecting or observing construction by taking out permits for the Work, calling for inspections and adhering to safety practices in accordance with standard practice. In the case of conflict of any of these provisions, the Owner shall be notified. The term Inspector means a Public Building Construction Inspector or an individual performing the inspection as required by building codes or jurisdiction.

6.6 LAWS

- A. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work. If the Contractor performs any Work contrary to such laws, ordinances, rules and regulations, he shall bear all costs and delays arising therefrom.
- B. Owner and Contractor have all rights provided by law not specifically waived by this Contract.

6.7 EMERGENCIES

- A. In an emergency affecting the safety of life, the Work, or property, the Contractor, without special instruction or authorization from the Owner, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury; he shall so act without appeal if so instructed or authorized. Any compensation, claimed by the Contractor on account of emergency work, beyond Contractor's contractual obligations, shall be determined by agreement. The Contractor shall immediately notify the Owner in writing.

- B. In an emergency affecting the safety of life, the Work, or property or if an unsafe condition exists, the Owner may, but is not obligated, take measures to mitigate the condition. Such measures may include expending labor or material, engaging other contractors, entering the Project site utilizing materials, equipment, or facilities of Contractor. The Owner's actions may be performed immediately and without notice to Contractor. Contractor shall pay Owner for all costs which are attributable to Contractor.

6.8 SUBMITTALS

- A. Submittals include, but are not limited to shop drawings, product data, maintenance information, samples, manufactures instructions, certifications, and similar documents or items which demonstrate the way the Contractor proposes to perform the Work to the information in the Contract Documents. Contractor shall review the entire Contract Documents for other provisions relating to submittals and individual submittal requirements, if any.
- B. The Contractor shall review, stamp with his approval and submit to the Architect in orderly sequence so as to cause no delay in his Work or in the work of any other contractor, all submittals required by the Contract. Submittals shall be properly identified with specification section. At the time of submission, the Contractor shall note in writing any deviation in the submittals from the requirements of the Contract Documents. By approving and submitting shop drawings and samples, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalogue numbers and similar data, and that he has checked and coordinated each shop drawing and sample with the requirements of the Work and of the Contract Documents.
- C. The Architect will review submittals for conformance with the designed concept and with the information given in the Contract Documents. A minimum of 10 working days is required for each submittal review. The Architect's review will not relieve the Contractor of responsibility for complying with the Contract Documents. If a submittal is required to be resubmitted, the time and cost of resubmission is the responsibility of the Contractor.

6.9 SUBSTITUTIONS

- A. The intent of the Specifications is to specify high grade equipment and materials appropriate for the Project. It is not the intent of the Specifications to exclude or limit the products of any responsible manufacturer, except when the Owner has adopted a specific system or product which will be noted, "No Substitutions Allowed", or similar language. Where equipment, material, or process is specified by trade name or by patentee, manufacturer or dealer, it shall mean the specified item or product. No substitution shall be made by the Contractor without written approval of the Architect. The Architect shall be the sole judge of a Contractor proposed substitution. See Division 01 for Substitution requirements. The

Architect's refusal to approve a substitution shall not effect the progress of the Work and is not grounds for a Claim against the Owner.

- B. The Contractor shall pay a \$200, lump sum, for the Architect's time to review substitution requests. Payment is to be included with the substitution request package.

6.10 CORRECTING WORK

- A. The Contractor shall promptly correct all Work rejected by the Owner or Architect, whether observed before or after the Notice of Completion and whether or not fabricated, installed or completed. The Contractor shall not receive a time extension for correcting such rejected Work. All such defective or non-conforming Work shall be corrected to comply with the Contract Documents without cost to the Owner. The Contractor shall bear the cost of making good all Work of separate contractors which may be destroyed or damaged by such removal or correction.
- B. If any Work should be covered before it is inspected, the Contractor at his expense, must uncover the Work for inspection and then replace the Work.
- C. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, or fails to perform any provisions of the Contract Documents, the Owner may, after seven (7) working days written notice to the Contractor and without prejudice to any other remedy Owner may have, and without Contract termination or ordering the Contractor to stop Work make good such deficiencies in any manner the Owner deems expedient. In such case an adjustment to the Contract shall be made in accordance with Section 2, Contract Modifications, deducting from the payment then or thereafter due the Contractor, the cost of correcting such deficiencies, including the cost of additional services made necessary by such default, neglect or failure.
- D. If the Owner deems it not expedient to correct Work damaged or not done in accordance with the Contract Documents, a deduction from the Contract price shall be made.
- E. If the Contractor fails to correct defective Work or fails to supply materials or equipment in accordance with the Contract Documents, the Owner may order the Contractor to stop the Work or any portion thereof until the cause of such order for the Work has been eliminated. Contractor shall not receive a time extension or compensation as a result of stopping Work as required by this provision.

6.11 TESTING

- A. The Owner will provide for testing of materials or workmanship as required by these Specifications. The Contractor shall coordinate and schedule tests directly with the testing firm. The costs of tests on materials at the Project site will be

borne by the Owner, except for retesting, as specified below, the material required for testing, and the Contractor's labor required to facilitate the test or delayed by the test, which the Contractor shall furnish. The Contractor will cooperate with the Owner's testing representative in the taking of test Samples. The Contractor shall pay for all tests which are not performed at the job site.

- B. Required tests are specified elsewhere in the Specifications.
- C. Should the results of any required tests fail to meet the requirements of the Contract Documents, Contractor shall either correct the unacceptable condition or furnish new materials, as directed by the Owner. Additional tests shall be made at the Contractor's expense until the materials are found to meet the requirements of the Contract Documents.
- D. Should the results of any soil compaction tests fail to meet the requirements of the Specifications, Contractor shall recondition and/or recompact the fill, and additional tests shall be made at the Contractor's expense until the compaction is found to meet the requirements of the Specifications.
- E. Testing or inspection services required outside of regular working hours shall be paid for by the Contractor.
- F. When existing building systems such as fire alarms, fire sprinkler systems, smoke detectors, halon systems, etc., are modified by the Work, the Contractor shall test the entire system at the completion of the Work and demonstrate to the Owner that the system is functioning correctly and reliably.

6.12 RECORD DOCUMENTS

- A. The Contractor shall maintain at the site record documents consisting of all Drawings, Specifications, addenda, approved shop drawings and samples, Change Orders, Construction Change Directives, instructions from the Architect, and other documents relating to the Project. All record documents shall be marked legibly by the Contractor to record all changes to the Work, field measurements, actual conditions, and adjustments made during construction.
- B. Upon completion of the Work, Contractor shall transfer all record document information to a clean set of Drawing and Specifications and electronic media compatible with the Owner's software and deliver them to the Architect. CAD documents shall be in sheet format. Contractor shall provide any explanation or clarification of the record documents requested by Owner or Architect.

6.13 OPERATING AND MAINTENANCE MANUALS

Assemble and bind two (2) hardcopy sets and one (1) electronic PDF file, clearly categorized according to the Project Specifications, of all guarantees, certificates,

warranties, operating instructions, as-built specification, and maintenance manuals into clearly organized files with an index, a list of Subcontractors and suppliers including their names, addresses, and phone numbers and present to Architect at the completion of the Work.

6.14 TRAINING TO OWNER/OWNER'S REPRESENTATIVE

Contractor shall provide training to the Owner and Owner's representatives for all operating systems, features, and equipment. Training shall be sufficient to explain and demonstrate the location, function, and operation and shall be a minimum of four (4) hours for each item of Work. Training shall be given by a person familiar with the Project. Operation and Maintenance manuals must be available to the Owner prior to training and referenced during the training. Contractor to provide Owner with videos taken of the training(s), particularly of systems such as fire alarm, HVAC, and building management system(s). Contractor and Owner shall agree which systems will require videos of training.

7 TIME

7.1 DEFINITION OF OFFICIAL DATES

- A. The Contract Time is the period of time indicated in the Agreement for achieving completion of the Work. Time is of the essence for the Contract. The term day as used in reference to Contract Time shall mean calendar day.
- B. The Notice to Proceed from the Owner shall establish the official date the Work may commence and the start of the Contract Time.
- C. The date of Substantial Completion of the Work is the date established by the Architect. The date of beneficial occupancy or acceptance of the Work may be determined by the Owner but not effect the Contract Time or terms of the Agreement.
- D. The date of Final Completion is the date established by the Architect after Substantial Completion when the Work is complete in every detail. Retention may be withheld until after Final Completion.

7.2 SUBSTANTIAL COMPLETION

- A. Substantial Completion is the stage in the progress of the Work when the entire Work, or a designated portion thereof, is sufficiently complete in accordance with the Contract Documents to allow the Owner to use and occupy the entire Work or portion as intended. Prior to Substantial Completion the Contractor shall have inspected the Work, completed corrective measures, obtained all approvals necessary for occupancy, placed into operation all equipment and systems, and obtained the Architects concurrence that Substantial Completion of the Work has

- B. When the Contractor considers that the Work, or designated portion thereof, is substantially complete, the Contractor shall provide a written notice to the Architect and Owner in which the Contractor certifies that the Work or portion is Substantially Complete, lists all remaining incomplete deficiencies of the Work, and requests inspection and acceptance. The failure to include any items on such list does not alter the responsibility of the Contractor to complete the Work in accordance with the Contract Documents.
- C. Upon receiving notice in accordance with paragraph 7.2.B, the Architect and/or Owner will review the Work or designated portion thereof. If the Architect determines the Work or portion is substantially complete, the Architect will establish a date of Substantial Completion. If the Architect determines the Work or portion is not Substantially Complete the Contractor will be notified. Contractor is required to initiate re-inspections by providing notice in accordance with Section 7.2B and reimburse the Owner for the cost of the reinspection.
- D. The guarantee period, and associated warranty period(s), shall begin on the date of Substantial Completion. A separate date of Substantial Completion shall be established for designated portions of Work according to the Contract Documents or as agreed to by Owner.
- E. Any Work used by Contractor prior to Substantial Completion shall be made new as of the date of Substantial Completion. Such Work may include lights, filters and systems or equipment requiring periodic maintenance.

7.3 LIQUIDATED DAMAGES

- A. Should the Work not be Substantially Complete, as defined herein, and within the Contract Time, damages will be sustained by the Owner. The Owner may impose liquidated damages to portions of the Work. As it may be extremely difficult, not feasible, or may be impracticable to use County resources to determine the amount of actual damage the County may suffer should Contractor fail to complete the work within the time specified, it is understood and agreed the Contractor shall pay the Owner as fixed and liquidated damages, and not a penalty, the amount set forth in the Agreement for each calendar day of delay in completion. Contractor and its surety shall be liable for the amount thereof pursuant to Government code Section 53069.85. It is therefore agreed that the Contractor will pay the Owner the amount specified in the Notice to Contractors Document 00 11 16, as and for the Owner's liquidated damages. The liquidated damages amount covers Owner's damages only and is not in lieu of the indemnification obligations set forth separately in Section 9 nor shall these liquidated damages cover damages, including delay damages, claimed by third parties. Third parties shall include other contractors working on the Project. In the event the Contractor fails to make such payment, the Owner may deduct the amount thereof from any

money due or that may become due to the Contractor under the Contract and should the balance due under the Contract not be sufficient to cover the amount owed, the Owner shall have the right to recover the balance from the Contractor, or from the Contractor's sureties.

- B. The Owner may impose liquidated damages to portions of the Work.

7.4 USE AND OCCUPANCY PRIOR TO SUBSTANTIAL COMPLETION

- A. The Contractor agrees to use and occupancy of a portion of the Work by the Owner upon Substantial Completion.
- B. Prior to the Owner occupying a portion of the Work, a list of Work to be completed or corrected shall be prepared jointly by the Contractor and Architect.
- C. Occupancy by the Owner shall not be construed by the Contractor as being an acceptance of the Work by Owner of that part of the Work to be occupied.
- D. The Contractor shall not be held responsible for any damage to the occupied part of the Work resulting from the Owner's occupancy after Substantial Completion.
- E. Occupancy by the Owner shall not be deemed to constitute a waiver of any claims which Owner or Contractor may have.
- F. Use and occupancy of a portion of the Work by the Owner prior to Substantial Completion does not relieve the Contractor of his responsibility to maintain all insurance and bonds required under the Contract until the Work is completed and accepted by Owner.

7.5 SCHEDULE

- A. Contractor shall submit to the Owner and Architect a schedule for the Work.

The schedule shall be a series of tasks representing the Contractor's plan for performing the Work including all activities both onsite and offsite, submittal due dates, submittal review periods, material purchasing, lead or fabrication times, a period for punchlist and corrections, final inspection and approvals, and other events or activities having an effect on the progress or completion of the Work. For each task, the schedule shall show the duration, the starting and finish dates, predecessors, successors, and the average manpower and equipment planned. The schedule shall be submitted in bar chart and pert chart format and with a separate task list showing all data in spreadsheet format. No single task on the schedule may exceed two weeks in duration. See General Requirements 01 00 00 for additional Schedule requirements.

(1) PRELIMINARY SCHEDULE

A. Submission

1. Submit the Preliminary Contract Schedule to Owner either within 10 working days after receipt of Notice of Award and/or with the Agreement.
2. Within seven (7) working days after receipt of the Preliminary Schedule, Owner will notify Contractor of its acceptance of, or its review comments about, the schedule so that appropriate adjustments may be made by Contractor in the development of the Schedule.

B. Form

1. Prepare the Preliminary Schedule in sufficient detail to demonstrate preliminary planning for the Work and to represent a practical plan to complete the Work within the Contract Time
2. Identify the following milestone events on the Preliminary Schedule:

- Demolition
- Utilities Shutdowns
- Exterior Work
- Rough Framing
- Interior Partitions
- Rough-Outs (Mechanical, Plumbing, Electrical and Fire Alarm, Fire Sprinklers)
- Trimming
- Electrical
- Interior Drywall
- Finishes
- Painting
- Signage
- Agencies' Inspections
- Beneficial Occupancy
- Punchlist
- Project Closeout

3. Identify all holidays and non-working days on the Preliminary Schedule.

C. Activities

1. Identify all Work activities which constitute the critical path, including any known material and equipment lead times.

2. Shutdowns for all utilities as determined from listing provided by Owner's Representative as part of Contract Documents.

(2) SCHEDULE

A. Submission

1. Submit the Schedule, also known as the Baseline Schedule, in the form and having general content acceptable to Owner and shall be based on the review and comments to or acceptance of the Preliminary Schedule, within ten (10) working days following Owner's written acceptance of the Preliminary Schedule.
2. Owner, with Owner's Representative will determine acceptability of the Schedule within seven (7) working days after its receipt.
3. No Application for Payment will be processed nor shall any progress payment become due until the Baseline Schedule is accepted by Owner in writing.

B. Form

1. The Schedule shall be suitable for monitoring progress of the Work, in sufficient detail to demonstrate adequate planning for the Work, and shall represent a practical plan to complete the Work within the Contract Time.
2. Identify the milestone events as indicated above including additional milestones identified by Owner upon review of the Preliminary Schedule.
3. Identify all holidays and non-working days on the Schedule.
4. If the Schedule is shown on more than one (1) sheet, provide a summary sheet.

C. Activities

1. Identify all Work activities in correct sequence for the completion of the Work. Work activities shall include the following:
 - a. Major Contractor-furnished equipment, materials, and building elements, lead times, and scheduled activities requiring submittals or Owner's prior approval.
 - b. Show dates for the submission, review, and approval of each submittal. Dates shall be shown for the procurement, fabrication, delivery, and installation of major equipment,

materials, and building elements, and for scheduled activities designated by Owner.

c. For Submittals, a minimum of ten (10) working days shall be allotted in the Schedule for the Architect to review each submittal.

d. Contractor's internal pre-functional testing and final System test dates.

e. Scheduled overtime Work if required by Contract Documents.

f. Dates Contractor requests designated working spaces, storage areas, access, and other facilities to be provided by Owner.

g. Dates Contractor requests orders and decisions from Owner on designated items.

h. Dates Contractor requests Owner-furnished equipment.

i. Dates Contractor requests Owner-furnished utilities.

j. Connection and relocation of existing utilities.

k. Connecting to or penetrating existing structures.

l. Scheduled inspections as required by Codes, or as otherwise specified.

2. Identify all Work activities that constitute the critical path.

3. Critical Work activities are defined as Work activities which, if delayed or extended, will delay the scheduled completion of one or more of the milestones specified in this Section or the scheduled completion of the Work, or both. All other Work activities are defined as non-critical Work activities and are considered to have float.

4. Float is defined as the time that a non-critical Work activity can be delayed or extended without delaying the scheduled completion of milestones specified in this Section or the scheduled completion of the Work, or both. Neither Contractor nor Owner shall have an exclusive right to the use of float. The party using float shall document the effect on the updated Schedule.

5. Delays of any non-critical Work activity shall not be the basis for an extension of Contract Time until the delays consume the float

associated with that non-critical Work activity and cause the Work activity to become critical.

6. The presentation of each Work activity on the Schedule shall include a brief description of the Work activity, the duration of the Work activity in days, and a responsibility code identifying the organization or trades performing the Work activity.

7. See 8.2 Contract Amount Breakdown – Schedule of Values for requirements to establish costs for each Work activity of the Schedule which cumulatively equal the total Contract amount.

(3) PROGRESS SCHEDULE

A. Updating the Schedule provides the Owner with a schedule of the progress of the work (Progress Schedule). The Contractor must submit Progress Schedule(s) prepared in accordance with the requirements of the Contract Documents.

B. Updating

1. Review the Schedule with Owner once each week to incorporate in the Progress Schedule all changes in the progress, sequences, and scope of Work activities.

2. Prepare and submit to Owner an updated Schedule, as the Progress Schedule, once each month, or as mutually agreed.

a. A Progress Schedule shall accurately represent the as-built condition of all completed and in-progress Work activities as of the date submitted.

b. The Progress Schedule shall incorporate all changes mutually agreed upon by Contractor and Owner during preceding periodic reviews and all changes resulting from Change Orders, Field Orders and Amended Construction Documents.

c. Contractor shall perform the Work in accordance with the updated Schedule. Contractor may change the Project Schedule to modify the order or method of accomplishing the Work only with prior agreement by Owner.

3. Contractor shall submit the updated Schedule, as the Progress Schedule, in the form acceptable to Owner, at least five (5) working days prior to submitting the Application for Payment. Contractor will provide a written progress report of the Schedule to the Owner in a format approved by Owner.

4. Owner's Representative will determine acceptability of each Progress Schedule within five (5) working days after its receipt.
5. No Applications for Payment will be processed nor shall any progress payments become due until updated Progress Schedules are accepted by Owner.
6. The accepted Progress Schedule shall be the Schedule of record for the period it is current, shall be in compliance with the Contract Documents, and shall be the basis for the Owner's approval of the Contractor's monthly (or as mutually agreed) payment requests during that period.
7. The Owner's review and acceptance of the Contractor's updated Progress Schedule is for compliance with the requirements of the Contract Documents only. Review and acceptance by the Owner of the Contractor's Progress Schedule(s) does not mean approval of the sequence or duration of the tasks shown, and does not relieve the Contractor of any of the Contractor's responsibility for the accuracy or feasibility of the Schedule, or of the Contractor's obligation to meet the milestone dates established in the Schedule and the date of contract completion to the Contract Time.
8. The Owner's review and acceptance of the Contractor's Progress Schedule does not expressly or implicitly warrant, acknowledge, or admit the reasonableness of the logic, durations, cost, manpower or equipment loading indicated in the Progress Schedule.

(4) 3-WEEK LOOK AHEAD SCHEDULE

- A. During the course of construction, Contractor shall provide a 3-week schedule at each construction meeting referred to as a 3-week look ahead schedule. This schedule shall indicate the construction schedule activities for that time period. This schedule shall identify any critical items impacting the Schedule or progress and any items requiring additional Work or Time.
- B. The Contractor shall carry on with the Work, for the construction of the various elements of the project concurrently, to the extent reasonable, and shall not defer construction of any portion of the work in favor of any other portion without the express written approval of the Owner.

- B. The Schedule may be revised as required by the progress and conditions of the Work, change orders and all other factors that could influence the date of Substantial Completion and/or Contract Time.
- C. Contractor shall post the current Schedule on the Project site in a location readily accessible to the Owner and Architect.
- D. Weather delays shall be allowed for in the Contractor's Schedule. Additional time will be granted for adverse weather to the extent the number of scheduled work days lost due to weather.

7.6 DETERMINATION OF WEATHER DELAYS

- A. Except for rain, if weather conditions are the basis for delays for continuing or completion of the Work or any designated portion of the Work, Contractor must substantiate that the weather conditions were abnormal, based on the climatologically data for the immediate preceding 10-year period. The Contractor must establish that the adverse weather conditions could not have been reasonably anticipated to constitute a weather delay.
- B. When the amount of rain is considered to be abnormal, additional rain days will be allowed and extensions to the Contract Time(s) will be granted where the condition of the site (exterior or interior location) or access to the site as determined by the Owner, is such that Contractor can perform no Work identified on the current version of the Progress Schedule in effect at the time the delay occurred. Rainfall will be considered unusually severe only when the Days of Rain (defined as more than one-tenth (1/10th) of an inch of rain per day) in any month exceed the number of allowed rain days per month.
- C. No Contract Time extension for rain will be allowed for any month until the established number of allowed rain days for the that month have been exceeded. The allowable rain days per month for this Project are as follows:

January: 2
February: 2
March: 2
April: 0
May: 0
June: 0
July: 0
August: 0
September: 0
October: 2
November: 2
December: 2

D. Contractor must exercise due diligence in protecting the Work and the Work site from the adverse impacts of weather by:

1. Taking appropriate preventative actions before anticipated inclement weather to protect the Work and Work site from the potential adverse effects of the weather;
2. Taking corrective action during the inclement weather to protect the Work and Work site from the actual and potential adverse effects of the inclement weather; and
3. Taking correction action after the inclement weather to remedy, prevent, and/or mitigate the negative impacts of the adverse weather on the Work and the Work site.

7.7 DELAY AND TIME EXTENSIONS

A. The Owner will consider extensions to the Contract Time for the following reasons only if they affect the Critical Path of the Official Progress Schedule.

1. Acts of God (as defined in PCC 7105 (b) (2)) or of the public enemy, acts of Government, acts of Owner, fires, floods, epidemics, quarantine restrictions, sanctioned strikes, freight embargoes, unusually severe weather, or delays of Subcontractors or Suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both Contractor and such Subcontractors or Suppliers.
2. Delays in progress due to an act of neglect by Owner only for the amount of delay time that occurs after Contractor has notified Owner in writing and the Owner has had a reasonable time to respond to the notification.
3. An Approved Change Order that extends the Contract Time.

B. Within twenty-four (24) hours from the beginning of any critical path delay to the current updated Schedule, Contractor must notify Owner in writing of the causes of delay.

C. Within ten (10) working days from the end of any critical path delay to the Schedule, Contractor must submit two (2) hard copies and electronic data files of all supporting information to validate the impact of the delay on the Contract Time.

D. The Owner will ascertain the facts and the extent of the delay and adjust the Contract Time for completing the Work when, in Owner's judgment, the facts justify an adjustment. Owner's determination is final and conclusive.

E. Delay and Contractor's entitlement for delay will be determined as follows:

1. The following definitions apply to a Delay and Time Extension:
 - a. **"Excusable Delay"** means any delay in the Work caused by conditions beyond the control and without the fault or negligence of the Contractor.
 - b. **"Excusable Non-Compensable Delay"** means any Excusable Delay not solely the responsibility of the Contractor, such as, earthquake, fire, flood, and inclement weather conditions that caused a delay of Work on the critical path of the Schedule. The financial inability of the Contractor or any Subcontractor, Sub-subcontractor or Supplier, or the default of any Subcontractor, Sub-subcontractor or Supplier is not a condition beyond the Contractor's control. An Excusable Non-Compensable Delay may entitle the Contractor to an extension of the Contract Time, but will not entitle the Contractor to any adjustment of the Contract Sum.
 - c. **"Excusable Compensable Delay"** means any Excusable Delay caused by a delay of the Work on the critical path of the Schedule for which the Owner is solely responsible and which delay is unreasonable given the circumstances and not within the contemplation of the parties. An Excusable Compensable Delay may entitle the Contractor to an extension of the Contract Time and an adjustment of the Contract Sum.
 - d. **"Non-Excusable Delay"** means any delay in the Work resulting from causes within the control of the Contractor or due to the fault or negligence of the Contractor or its Subcontractors or Suppliers. A Non-excusable Delay shall not entitle the Contractor to an extension of the Contract Time or an adjustment of the Contract Sum.
2. Whenever the Contractor foresees any delay in the prosecution of the Work, the Contractor must notify the Owner in writing of the potential delay. Such notification must specify with detail the cause asserted by the Contractor for the potential delay and provide a description of the anticipated effect of the potential delay on the most recent updated Schedule including identification of the activity numbers of the affected activities. Failure of the Contractor to submit such a notice after recognition of any incident or event giving rise to the potential delay will constitute a waiver by the Contractor of any request for extension of the Contract Time, and no extension of the Contract Time will be granted as a consequence of such delay.

3. Within twenty-four (24) hours from the beginning of any critical path delay to the Progress Schedule, Contractor must submit written notice to the Owner of the delay. The notice must include identification of the affected activities, evidence of the cause of the delay, and within ten (10) working days of the end of the critical path delay, Contractor must submit a Time Impact Analysis per F. Time Impact Analysis.
4. Owner has no obligation to consider any request for extension to the Contract Time unless the Contractor satisfies the requirements set forth in the Contract Documents for providing notice of potential delay and submission of a Time Impact Analysis establishing the impact of the delay on the critical path of the latest Progress Schedule.
5. Owner is not responsible to the Contractor for any constructive acceleration due to Contractor's failure to comply with the submission and justification requirements of the Contract Documents for Contract Time extension requests. The Contractor's failure to perform in accordance with the latest Progress Schedule shall not be excused because the Contractor has submitted Contract Time extension requests, unless and until Owner approves such requests.
6. Extension to the Contract Time will not be allowed for delays on paths of activities containing Total Float Time per the latest Progress Schedule, providing such delay does not exceed the Total Float Time(s) on paths of activities on the latest Progress Schedule.
7. Any extension of Contract Time granted the Contractor pursuant to this section, does not constitute a waiver by Owner of, nor a release of the Contractor from, the Contractor's obligation to perform the Work within the Contract Time specified by the Contract Documents, as modified by the particular extension in question. Owner's decision to grant an extension of the Contract Time due to one circumstance set forth in one request, shall not be construed as a grant of an extension for any other circumstance or the same circumstance occurring at some other time, and shall not be viewed by the Contractor as a precedent for any other request for extension of the Contract Time.
8. If Owner orders the Contractor to suspend Work pursuant to the Contract Documents, the Contractor will not be entitled to any extension of the Contract Time, damages resulting from the suspension, unless the Contractor can establish that the suspension was Ordered without reasonable justification.

F. Time Impact Analysis

1. The time impact analysis must provide information justifying the request for extension of the Contract Time and stating the extent of the adjustment requested for the alleged delay. Time impact analysis must be in form and content acceptable to the Owner and include, but not be limited to, the following:

- a. Time impact analyses must be based on analyzing the Progress Schedule in effect at the time the alleged delay or impact first occurred.
- b. The Contractor must present fragmentary Critical Path Method (CPM) type network windows (fragments) in time scaled precedent format, illustrating how Contractor proposes to incorporate the alleged delay into the Progress Schedule in effect at the time the alleged delay or impact first occurred.
- c. The Contractor must identify the activities that are proposed to be amended due to the alleged delay.
- d. The Contractor must identify the preceding and succeeding activities in the Official Progress Schedule to which the fragment(s) is to be connected.

H. Concurrent Delays

1. If an Excusable Non-Compensable Delay and an Excusable Compensable Delay operate to concurrently delay completion of the Work, the maximum extension of the Contract Time will be the number of Calendar Days from the commencement of the first delay to the cessation of the delay which ends last. Any adjustment of the Contract Sum will be in accordance with changes in the Work, and will be based only on the number of days of Excusable Compensable Delay, less the duration of the concurrence.
2. If a Non-Excusable Delay operates to concurrently delay completion of the Work with an Excusable Non-Compensable Delay, the maximum extension of the Contract Time will be the number of days of concurrent delay plus the non-concurrent portion of the Excusable Non-Compensable Delay. The entire delay is non-compensable.
3. If a Non-Excusable Delay operates to concurrently delay completion of the Work with an Excusable Compensable Delay the maximum extension of the Contract Time will be the number of days of concurrent delay plus the non-concurrent portion of the Excusable Compensable Delay. Any adjustment of the Contract Sum will be in accordance with changes in the

Work, and will be based only on the non-concurrent portion of the Excusable Compensable Delay.

4. Where the period of concurrent delay is sixty (60) calendar days or longer, the Owner will pay 50% of labor and material cost escalations experienced as a result of the concurrent delay following Contractor's demonstration of the cost escalations to the reasonable satisfaction of Owner.

8 PAYMENTS

8.1 CONTRACT AMOUNT

The Contract Amount as stated in the Agreement, including adjustments authorized under the terms of the Contract, is the total amount payable by the Owner to the Contractor for the complete Work.

8.2 CONTRACT AMOUNT BREAKDOWN – SCHEDULE OF VALUES

The Contractor shall, before the first application for payment, submit to the Architect and the Owner a Schedule of Values document which is a dollar value amount breakdown for the entire scope the Work of the Contract divided into categories so as to facilitate certification of completed Work for payment. The Schedule of Values shall be in such form as may be agreed upon by the parties and supported by such evidence as to its correctness that may allow the Architect and/or Owner's Representative to certify progress payments corresponding to the percentage of completed Work..

8.3 PROGRESS PAYMENTS

- A. The Owner shall make progress payments to the Contractor for labor and materials incorporated into the Work as called for by the Contract Documents and approved Change Orders. Not more often than once each month and on a day of each month agreed upon between the Owner and the Contractor, the Contractor shall submit to the Owner and the Architect, through the Owner's Representative, an application for payment consisting of a Certificate of Payment, a calculation of completed Work based on the approved payment breakdown and, if required by Owner, receipts, releases, or other evidence showing the Contractor's payments for materials, labor, Subcontractors, and any such information as the Owner may require. Payment shall not be owed if the application does not conform to these requirements.
- B. Payment for materials stored on site which have not been permanently incorporated into the Work is at the discretion of the Owner. Payment for

materials stored off-site, whether or not specially fabricated for the Project, can be made only when payment for such materials has been previously approved by the Owner and shown on the approved payment breakdown and such payment shall be conditional upon submission by the Contractor of a Bill of Sale in a form acceptable to the Owner or other such evidence as is required by the Owner to establish the Owner's title to such material. All materials stored off-site shall be stored in a bonded warehouse at no additional expense to the Owner.

- C. The Contractor shall present the application for payment, as required herein, to the Architect for approval using the Owner's previously approved Schedule of Values. The Architect will review and adjust the Certificate of Payment to such amount as he decides is properly due and deliver it to the Owner for payment.
- D. The Owner will retain five (5) percent of the amount of each payment due the Contractor until after the date of Owner's Certificate of Project Completion has been accepted by the County.
- E. No Certificate of Payment issued nor payment made to the Contractor nor partial or entire use of occupancy of the Work by the Owner shall be an acceptance of any Work not in accordance with the Contract Documents.
- F. The Contractor shall not assign any monies due or to become due hereunder without the written consent of the Owner and of all sureties executing bonds on behalf of the Contractor in connection with this Contract.

8.4 OWNER'S FAILURE TO ISSUE PAYMENT

Should the County fail to issue a progress payment to the Contractor for properly submitted, undisputed and approved amounts owed under the Contract within 30 calendar days, then the Owner shall pay interest to the Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure. Refer to the California Public Contract Code, Division 2, Part 2, Chapter 1, Article 8, Section 102.5 and other applicable sections. Contractor may, upon written notice to the Owner and provided the Owner does not pay the Contractor per the terms agreed to between the Owner and Contractor, stop Work only until Contractor receives the progress payment amount owed.

8.5 PAYMENTS WITHHELD

- A. The Owner may withhold payment, on account of subsequently discovered information, nullify the whole or a part of any progress payment or retention payment to such extent as may be necessary to protect the Owner from loss on account of:
 - 1. Defective Work.

2. Third party claims or reasonable evidence indicating probable filing of third-party claims.
3. Failure of the Contractor to make payments to Subcontractors or for material, labor or equipment.
4. The Owner's doubt that the Work can be completed for the unpaid portion of the Contract Amount.
5. Damage to another contractor's work.
6. Damage to Owner's property.
7. Failure to pay fees in accordance with the Contract Documents.
8. Owner's cost of correcting deficiencies in the Work or undertaking any Work.
9. Liquidated damages or anticipated liquidated damages.
10. Any amount owed to Owner or claimed by Owner.
11. Contractor's failure to deliver as-built drawings, guarantees, operating manuals or other documents.
12. Failure by Contractor to fulfill any Contract requirement.

8.6 FINAL PAYMENT AND RETENTION PAYMENT

- A. The final payment shall be the one made in response to the Contractor's one hundred percent (100%) complete application for payment which will bring the total paid to date to the Contractor to ninety-five percent (95%) of the Contract Amount. Contractor's acceptance of the final payment shall constitute a waiver of all claims by Contractor except those previously made in writing.
- B. The Owner is entitled to retain five percent (5%) of the amount of each payment due Contractor, as Retention, until at least sixty (60) calendar days after the date of recording the Notice of Completion, as per California Public Contract Code, Division 2, Part 1, Chapter 7, Section 7107.
- C. As a prerequisite to the release of retention, Contractor shall sign a Release of Liens in a form prescribed by Owner.
- D. Contractor shall not be paid interest on retention.

9 INSURANCE

9.1 HOLD HARMLESS/INDEMNIFICATION

- A To the full extent permitted by law, CONTRACTOR shall indemnify and save harmless the COUNTY, its officers, employees, and servants from all claims, suits, or actions of every name, kind, and description, brought for, or on account of: (A) injuries to or death of any person, including CONTRACTOR, its officers, employees and servants, or (B) damage to any property of any kind whatsoever and to whomsoever belonging, (C) any sanctions, penalties or claims of damages resulting from CONTRACTOR'S failure to comply with applicable laws, or (D) any other loss or cost resulting from the CONTRACTOR'S negligent or reckless acts or omissions or willful misconduct in connection with the performance of any work required of CONTRACTOR or payments made pursuant to this Agreement, provided that this shall not apply to injuries or damage for which the COUNTY has been found in a court of competent jurisdiction to be solely liable by reason of its own negligence or willful misconduct.
- B The duty of CONTRACTOR to indemnify and save harmless as set forth herein, shall include the duty to defend as set forth in Section 2778 of the California Civil Code.
- C The obligations set forth in this section shall continue beyond the term of this Agreement as to any act or omission which occurred during or under this Agreement.

9.2 INSURANCE

- A. The Contractor shall not commence Work under this Contract until all required insurance has been obtained and such insurance has been approved by the Owner. The Contractor shall furnish the Owner with Certificates of Insurance evidencing the required coverage, and there shall be a specific contractual liability endorsement extending the Contractor's coverage to include the contractual liability assumed by the Contractor pursuant to this Contract. Certificates of Insurance shall be filed with the Owner within ten (10) calendar days after award of the Contract. These certificates shall specify or be endorsed to provide that thirty (30) calendar days notice must be given, in writing, to the Owner of any pending change in the limits of liability or of any cancellation or modification of the policy.
- B. The Contractor shall have in effect during the entire life of this Contract Workers Compensation and Employers Liability Insurance providing full statutory coverage; and in case any work is sublet, the Contractor shall require all Subcontractors similarly to provide Workers Compensation and Employers Liability Insurance to full statutory limits of the California Labor Code. In signing this Contract, the Contractor makes the following certification, required by Section 1861 of the Labor Code:

“I (Contractor Name/Company), am aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of the Code, and I (Contractor Name/Company) will comply with such provisions before commencing the performance of the work of this Contract”.

- C. The Contractor shall take out and maintain during the term of this Contract such Bodily Injury Liability and Property Damage Liability Insurance as shall protect Contractor and any Subcontractor performing Work covered by this Contract, from any and all Claims for damages for bodily injury, including accidental death, as well as any and all Claims for property damage including third party property damage to include coverage on property in the care, custody and control of the Contractor, which may arise from the Contractor's operations under this Contract, whether such operations be by Contractor or by any Subcontractor or by anyone directly or indirectly employed by either of them. Such insurance shall be combined single limit bodily injury and property damage for each occurrence and shall not be less than the amount specified below. Such insurance shall include:
1. Comprehensive Commercial or General Liability Insurance
 - a. \$1,000,000 Bodily Injury/Property Damage Each Occurrence
 - b. \$2,000,000 Product/Completed Operations Aggregate
 - c. \$2,000,000 General Aggregate
 - d. \$50,000 Fire Damage Legal Liability
 - e. \$5,000 Medical Payments
 - f. Coverage shall include but not be limited to the following supplementary coverages:
Contractual Liability to cover liability assumed under the Agreement;
Product and Completed Operations Liability Insurance;
Broad Form Property Damage Liability Insurance;
Explosion, collapse and underground hazards (deletion of the X, C, U exclusions) if such exposure exists; and
Independent Contractors.
 2. Motor Vehicle/Automobile Liability Insurance: \$1,000,000 Combined Single Limit.
 3. Workers' Compensation and Employer's Liability Insurance, Workers' Compensation Insurance Statutory benefits as provided by the California statute and Employer's Liability Limits as follows:
 - a. \$1,000,000 Bodily Injury with Accident – Each Accident
 - b. \$1,000,000 Bodily Injury by Disease – Policy Limit
 - c. \$1,000,000 Bodily Injury by Disease – Each Employee
- D. The Owner and its officers, agents, employees and servants shall be named as additional insured on any such policies of insurance, which shall also contain a provision that the insurance afforded thereby to the Owner, its officers, agents,

employees and servants shall be primary insurance to the full limits of liability of the policy, and that if the Owner or its officers, agents? and employees have other insurance against the loss covered by such a policy, such other insurance shall be excess insurance only.

- E. The Owner shall purchase and maintain at Owner's expense All Risk Property Insurance or Builder's Risk Insurance, excluding Earthquake and Flood coverage, in an amount covering all work and materials in the Contract, including that of Subcontractors, in an amount equal to the Contract Amount including adjustments. Subcontractors shall be included as insureds and the Owner shall be named as a Loss Payee as its interests may appear. Said insurance shall be maintained in complete coverage throughout the duration of the Contract until the one (1) year after the Completion Date of the Project.

9.3 FAILURE TO PROVIDE INSURANCE

If Contractor fails to provide insurance as required herein, the Owner, at its option, may take out and maintain such insurance as the Owner deems in its best interest and charge the cost thereof to the Contractor, which may be at a higher cost.

10 GUARANTEES

10.1 REQUIRED GUARANTEES

- A. In addition to guarantees required elsewhere in the Contract Documents, the Contractor shall guarantee all of the Work, and each Subcontractor shall guarantee his own Work, against defective material or faulty workmanship for a minimum of one (1) year after the date of Substantial Completion. All guarantees must be submitted in triplicate to the Architect on the Contractor's own letterhead in the form prescribed by Owner.
- B. In addition to the requirements of paragraph 10.1.A, all standard manufacturer warranties shall be passed to the Owner which may extend the warranty period beyond one (1) year.
- C. The date of guarantee and all warranties for the Work shall commence upon the Owner's agreed Substantial Completion Date, when the County achieves beneficial use and occupancy of the Project, or phase of the Project.
- D. In addition to the guarantees and warranties required by the Contract Documents, the Owner has all rights and remedies provided by law including those pertaining to latent defects.

10.2 REPAIR OF GUARANTEED WORK

- A. If repairs are required in connection with guaranteed Work, the Contractor shall

promptly upon receipt of written notice from the Owner, and without expense to the Owner:

1. Place in satisfactory condition in every detail all of such guaranteed Work;
 2. Make good all damage to the building, site, equipment, furniture, or contents which, in the opinion of the Owner, is the result of work not in accordance with the terms of the Contract Documents or disturbed in the process of correcting guaranteed Work.
- B. If the Contractor disturbs any work guaranteed under another contract in fulfilling the requirements herein he shall restore such disturbed work to a condition satisfactory to the Owner and guarantee such restored work to the same extent as it was guaranteed under the Contract.
- C. A new full term guarantee period shall apply to repaired work upon completion of repairs.
- D. If Contractor fails to proceed to comply with the terms of the guarantee to make repairs of defective work within seven (7) calendar days of Notice from Owner, the Owner may remedy the Contractor's failure by whatever means the Owner deems expedient. The Owner may, at any time, take measures to mitigate damage or reduce undesirable effects of defective work. All costs expended by Owner pursuant to this Section shall be paid by Contractor.

END OF DOCUMENT 00 72 13

DOCUMENT 00 73 36

**SAN MATEO COUNTY SUPPLEMENTARY GENERAL CONDITIONS
EQUAL EMPLOYMENT OPPORTUNITY (EEO) PROGRAM FOR MINORITY
EMPLOYMENT**

1. STATEMENT OF INTENT

It is the intent of the Board of Supervisors of the County of San Mateo to prohibit and eliminate employment discrimination and to further the opportunities for minority persons to be gainfully employed in the performance of County building contracts. The Bidder's attention is directed to all the provisions set forth herein. The Board of Supervisors has by Ordinance No. 2174 added Title 2, Chapter 2.50 to Division II of the San Mateo County Ordinance Code prohibiting discrimination in employment and providing for an Equal Employment Opportunity Program by Contractors doing business with the County of San Mateo. The following provisions are a part of the contract documents.

2. LOWEST RESPONSIBLE BIDDER

Award of contract to the low bidder shall not be made until the requirements set forth in these Supplementary General Conditions have been complied with and reviewed by the County Compliance Officer and a satisfactory Equal Employment Opportunity Program as submitted by the low bidder has been accepted.

A. Criteria for Determining Lowest Bidder. Criteria to determine the acceptability of bids on construction contracts requiring public bidding and involving an expenditure of \$6,500 or more shall include but not be limited to the following:

1. Criteria of Compliance with Federal and State Laws. Each bidder shall submit with his bid a certification that he is in compliance with the Equal Employment Opportunity Requirement of Executive Order 11246, Title VII of the Civil Rights Act of 1973, the California Fair Employment Practices Act and any other Federal or State Laws and regulations relating to Equal Employment Opportunities and the provisions of this article and the Board established guidelines implementing them. See report form entitled "Certification of Compliance with Laws Prohibiting Discrimination" bound herein after Form of Proposal.
2. Certification of Intent to Develop and Implement an Equal Employment Opportunity Program. Each bidder shall submit with his bid a certification that he will develop, implement and maintain,

DOCUMENT 00 73 36
SUPPLEMENTARY CONDITIONS

during the course of work concerned, an affirmative action program in employment conducted without regard to race, religion, color, national origin, ancestry, physical or mental disability, or sex of the applicants. With this certification he shall submit any and all information which may be required by the County in connection with this program. As used in this Article, the term "minority" or "minority group" pertains to Latinos, Asians and Pacific Islanders, African Americans, American Indians, and women (regardless of her race or ethnicity). See report form entitled "Certification of Intent" bound herein after Form of Proposal.

3. Compliance by Subcontractors. The provision of this Section apply to any subcontractor engaged by the successful bidder, and each successful bidder shall notify his subcontractors of their obligations under the provisions of this Section.

3. PENALTIES FOR NON-COMPLIANCE WITH THE PROVISIONS OF THIS SECTION

- A. Any bidder who fails to submit a proposed Equal Employment Opportunity Program or who is unable to make the certifications required in this Section of the Supplementary General Conditions may be disqualified from consideration for the award of the contract.
- B. If, after an award is made, the Contractor is found by the County or by a Federal or State agency empowered to make such findings to be in substantial or material violation of the Fair Employment Practices Act of the State of California, the Equal Employment Opportunity Requirement of Executive Order 11246, Title VII of the Civil Rights Act of 1964, Section 503 of the Rehabilitation Act of 1973, or of the provisions of this Section, he may be found to be in material breach of his contract, and the County shall have the power to cancel the contract in whole or in part, or alternatively, to deduct for each working day during which the Contractor is found to have been in such non-compliance, two (2) percent of the total amount payable to the Contractor.

4. WAIVER OF COMPLIANCE

In the event that the requirements of this ordinance are found to work an undue hardship upon a low bidder, said bidder shall submit evidence of such hardship to the Board of Supervisors and shall petition the Board for a waiver of these requirements. This waiver shall only be granted by the Board of Supervisors and shall become an integral part of the contract.

5. DEFINITIONS

- A. Equal Employment Opportunity Program. Equal Employment Opportunity Program is a set of specific and result oriented procedures to which a Contractor commits himself in order to achieve equal employment opportunity.
- B. Compliance Officer. A Compliance Officer is the County official designated by the County Manager to represent him in the administration of these guidelines and in the enforcement of the provisions of Title 2, Chapter 2.50 of the County Ordinance Code.

6. CERTIFICATION OF COMPLIANCE AND INTENT

Every bidder shall submit with his bid a Certificate of Compliance with laws prohibiting discrimination and a Certification of Intent to implement an equal employment opportunity program on a form furnished by the County, as required by Title 2, Chapter 2.50 of the County Ordinance Code.

7. EQUAL EMPLOYMENT OPPORTUNITY PROGRAM

In addition to furnishing the Certification of Compliance, each Contractor will submit his Equal Employment Opportunity Program with his bid.

The EEO shall contain the following information:

- A. Analysis of current work force:
 - 1. Total number of employees
 - 2. Numerical racial breakdown of employees by job classification
 - 3. Information on apprentices

These figures will provide the base by which the Contractor's EEO will be evaluated. Factors to be considered both in the original statistics and in any plans for future employment will include the percentage of minority population in San Mateo County, the availability of minority construction workers and the present minority representation in the various construction trades.

- B. The equal employment opportunity actions the Contractor has taken or will take to insure equal employment opportunity. These shall include:
 - 1. Recruiting and hiring minority persons. If non-union personnel are employed this would involve employment advertising through sources which serve areas of minority population. These include local minority newspapers, referral agencies, high schools, vocational schools, and community groups. Specific information on

these sources may be obtained from the Compliance Officer. Union employees will be recruited in accordance with applicable labor agreements. The Contractor will seek to have included or will reaffirm clauses in all labor agreements prohibiting discrimination based on race, religion, color, national origin, age, ancestry, physical or mental handicap, or sex. Assistance for admission into the craft of minorities over the traditional apprenticeship age is also suggested. The Contractor will support Bay Area Construction Opportunity Program or similar groups as recruiting sources and will urge all labor organizations with which he has agreements to use BACOP.

2. Providing adequate opportunity for the upgrading or further training of all employees to insure equal opportunity in advancement and promotion. This might include a counseling service, information and assistance with night classes, or special career-directed program information.
 3. Appointing an Equal Employment Opportunity Coordinator - full time or as an additional duty. He will have the responsibility of administering an active program, informing company personnel and union representatives of this company policy and advising all subcontractors of their obligation to this program.
 4. Establishing or maintaining an apprenticeship or training program designed to insure hiring of additional minority employees in the journeyman or skilled classes, if possible. The Contractor is urged to support the Joint Apprenticeship Committee on this trade.
 5. Selecting minority subcontractor or subcontractors who are known for their ongoing program of apprenticeship for minorities. This includes advising minority contractor associations of bids for subcontractors. Joint ventures with minority subcontractors are encouraged.
- C. The EEO should state any previous experience the Contractor has had with similar plans and result of that effort. Any current equal employment opportunity plans should be described in detail and a copy attached, if printed plan is available. The Compliance Office will review the EEO submitted by each bidder in order to determine whether the program submitted complies with Title 2, Chapter 2.50 of the County Ordinance Code and these guidelines.

The EEO as submitted will be kept on file by the Compliance Officer. If the Contractor bids for other county contracts, he may refer to the EEO on file and state any changes, but will not be required to refile his program.

The Compliance Officer may request additional information from the bidder and will be available to answer questions relative to the guidelines and to advise those seeking assistance of resources known to him. He will not be responsible for the service or lack of service rendered by the resources recommended, nor will he develop an EEO for any bidder, or serve as a recruiter for any bidder.

Bidders may revise their EEO after consultation prior to award of contract. Deficiencies will be discussed and appropriate remedies suggested. If bidders withdraw their EEO for revision, their revised program must be submitted by a date established by the Compliance Officer.

The Compliance Officer will determine whether the low bidder's EEO is acceptable and will report to the appropriate county department. The EEO's of each subcontractor of the low bidder will also be evaluated by the Compliance Officer.

8. INCLUSION OF EEO AND CERTIFICATIONS

Upon award of the contract by the Board of Supervisors, the EEO and Certifications for the prime contractor and all subcontractors, which have been approved and accepted by the County, will become an integral part of the contract and subject to the provisions thereof.

9. PERFORMANCE OF CONTRACTOR

- A. The Contractor will post, in conspicuous places available to employees and applicants for employment, notices to be provided by the County, stating that the Contractor is obliged to comply with the provisions of these guidelines and Title 2, Chapter 2.50 of the County Ordinance Code. These notices will also be sent to all union and employee organizations and other recruiting sources providing employees to the Contractor.
- B. All announcements of job openings will include the statement: "An Equal Opportunity Employer".
- C. The Contractor will make written Progress Reports on a form provided by the County to illustrate the effectiveness of his EEO at intervals established by the County.
- D. The Compliance Officer will monitor the performance of the EEO until completion of the contract and will report the progress of the Contractor in living up to his EEO to the County Manager.
- E. The Contractor shall permit, during Contractor's normal business hours and at Contractor's place of business, access by the County to his records

of employment, employment advertisements, application forms and other data and records pertaining to Contractor's employment practices, for the purpose of determining whether Contractor is complying with the Non-Discrimination and Equal Employment Opportunity rules of the County.

10. PERFORMANCE OF SUBCONTRACTORS

- A. All subcontractors listed in a general Contractor's bid are subject to all the provisions of these guidelines and Title 2, Chapter 2.50 of the County Ordinance Code.
- B. All subcontractors will file their Certifications of Compliance and Intent and their EEO with the Equal Employment Coordinator of the prime Contractor for transmittal to the County, after award of the contract has been made.

END OF DOCUMENT

DOCUMENT 00 73 73

SUPPLEMENTARY CONDITIONS

**COUNTY OF SAN MATEO
EQUAL BENEFITS COMPLIANCE ORDINANCE NO. 4324, CHAPTER 2.84**

2.84.010 Definitions

For the purposes of this chapter:

(a) "Contract" means a legal agreement between the County and a Contractor for public works, consulting, or other services, or for purchase of supplies, material or equipment for which the consideration is in excess of \$5,000.

(b) "Contractor" means a party who enters into a Contract with the County.

(c) "Contract Awarding Authority" means the Board of Supervisors or the individual authorized by the Board of Supervisors to enter into Contracts on behalf of the County.

(d) "Domestic Partner" means any person who is registered as a domestic partner with the Secretary of State, State of California registry or the registry of the state in which the employee is a resident.

(e) "Employee Benefits" means the provision of any benefit other than pension and retirement benefits provided to spouses of employees or provided to an employee on account of the employee's having a spouse, including but not limited to bereavement leave; disability, life, and other types of insurance; family medical leave; health benefits; membership or membership discounts; moving expenses; vacation; travel benefits; and any other benefits given to employees, provided that it does not include benefits to the extent that the application of the requirements of this chapter to such benefits may be preempted by federal or state law. (Ord. 4324, 08/15/06)

2.84.020 Discrimination in the provision of benefits prohibited

(a) No Contractor on a County Contract shall discriminate in the provision of Employee Benefits between an employee with a domestic partner and an employee with a spouse, subject to the following conditions:

1. In the event that the Contractor's actual cost of providing a particular benefit for the domestic partner of an employee exceeds that of providing it for the spouse of an employee, or the Contractor's actual cost of providing a particular benefit to the spouse of an employee exceeds that of providing it for the domestic partner of an employee, the Contractor shall not be deemed to discriminate in the provision of Employee Benefits if the Contractor conditions providing such benefit upon the employee's agreement to pay the excess costs.

2. The Contractor shall not be deemed to discriminate in the provision of Employee Benefits if, despite taking reasonable measures to do so, the Contractor is unable to extend a particular employee benefit to domestic partners, so long as the Contractor provides the employee with a cash payment equal to the Contractor's cost of providing the benefit to an employee's spouse.

(b) The Board of Supervisors may waive the requirements of this Chapter when it determines that it is in the best interests of the County. The County Manager may waive the requirements of this chapter for Contracts not needing the approval of the Board of Supervisors where waiver would be in the best interests of the County for such reasons as follows:

1. Award of a Contract or amendment is necessary to respond to an emergency;
2. The Contractor is a sole source;
3. No compliant Contractors are capable of providing goods or services that respond to the County's requirements;
4. The requirements are inconsistent with a grant, subvention or agreement with a public agency;
5. The County is purchasing through a cooperative or joint purchasing agreement.

(c) Contractors should submit requests for waivers of the terms of this Chapter to the Contract Awarding Authority for that Contract, or in the case of Contracts approved by the Board, the County Manager.

(d) The Contract Awarding Authority, or in the case of Contracts approved by the Board, the County Manager, may reject an entity's bid or proposals, or terminate a Contract, if the Contract Awarding Authority determines that the entity was set up, or is being used, for the purpose of evading the intent of this Chapter.

(e) No Contract Awarding Authority shall execute a Contract with a Contractor unless such Contractor has agreed that the Contractor will not discriminate in the provision of Employee Benefits as provided for in this Chapter. (Ord. 4324, 08/15/06)

2.84.030 Application of Chapter

The requirements of this Chapter shall only apply to those portions of a Contractor's operations that occur (a) within the County; (b) on real property outside of the County if the property is owned by the County or if the County has a right to occupy the property, and if the Contractor's presence at that location is connected to a Contract with the County; and (c) elsewhere in the United States where work related to a County Contract is being performed. The requirements of this Chapter shall not apply to subcontracts or subcontractors of any contract or Contractor. (Ord. 4324, 08/15/06)

2.84.040 Powers and duties of the County Manager

The County Manager's office shall have the authority to:

(a) Adopt rules and regulations, in accordance with this Chapter and the Ordinance Code of the County of San Mateo, establishing standards and procedures for effectively carrying out this Chapter.

(b) Receive notification from employees of Contractors regarding violations of this Chapter.

(c) Determine and recommend to the Board of Supervisors for final decision the imposition of appropriate sanctions for violation of this Chapter by Contractors including, but not limited to:

1. Disqualification of the Contractor from bidding on or being awarded a County contract for a period of up to 5 years; and;
2. Contractual remedies, including, but not limited to termination of contract;
3. Liquidated damages in the amount of \$2,500;

(d) Examine Contractors' benefit programs covered by this chapter;

(e) Impose other appropriate contractual and civil remedies and sanctions for violations of this chapter;

(f) Allow for remedial action after a finding of non-compliance, as specified by rule;

(g) Perform such other duties as may be required or which are necessary to implement the purposes of this Chapter. (Ord. 4324, 08/15/06)

2.84.050 Date of Application

The provisions of this Chapter shall apply to any Contract awarded or amended on or after July 01, 2001, provided that if the Contractor is then signatory to a collective bargaining agreement, this Chapter shall only apply to any Contract with that Contractor which is awarded or amended after the effective date of the next collective bargaining agreement. (Ord. 4324, 08/15/06)

END OF DOCUMENT

SECTION 01 00 00

GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Inspect substrates to receive work and conditions under which the work is to be performed. Report any unsatisfactory condition in writing to the Owner's Representative. Do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Manufacturer's Instructions: Where installations include manufactured products, comply with the manufacturer's applicable instructions and recommendations for installation, to the extent that these instructions and recommendations are more explicit or more stringent than requirements are indicated in the Contract Documents.
- C. Provide attachment and connection devices and methods for securing work. Secure work true to line and level, and within recognized industry tolerances. Allow for expansion and building movement. Provide uniform joint width in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable visual-effect choices to Owner's Representative for final decision.
- D. Recheck measurements and dimensions of the work, as an integral step of starting each installation.
- E. Install work during weather conditions and project conditions which will ensure the best possible results in coordination with the work. Isolate units of work when incompatible to prevent deterioration.
- F. Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.
- G. Ensure there are no obstructions to spaces and installations when required to remain clear, in accordance with applicable code requirements.
- H. Ensure piping, wiring, ducts, or other installations are not enclosed until they have been inspected and approved, and required certificates of inspection have been issued.
- I. Mounting Heights: Mount individual units of work to comply with CAC, Title 24 and ADA requirements. Refer questionable mounting height choices to Owner's Representative for final decision.
- J. Ensure anchorage, blocking, joining, and other detailing are provided as required.
- K. Remove and replace work which does not comply with Contract Documents. Repair or replace work or property damaged by construction operations at no increase in Contract Sum.

1.02 SUPERINTENDENT

- A. In addition to the requirements of General Conditions of the Contract:
 - 1. General Contractor's supervisory personnel need to be present at all times that construction activity is occurring. The Superintendent shall represent the Contractor and all communications given to the Superintendent shall be as binding as if given to Contractor. If requested by Owner, Contractor shall provide a management organizational chart and a list of personnel comprising the superintendence staff. All references to the Superintendent elsewhere in the Contract Documents shall mean the superintendence staff.
 - 2. The Superintendent shall be in attendance at the Project site, all work hours, unless the Work is stopped due to conditions beyond the control of Contractor or until termination of the Contract in

accordance with the Contract Documents. Superintendent shall be acceptable to Owner and shall continue in that capacity for the duration of the Project, unless Superintendent ceases to be on Contractor's payroll or Owner otherwise agrees. The Superintendent shall not be employed on any other project by Contractor or any other entity during the course of the Work.

3. In the event any of the following conditions shall exist, Contractor shall require that Superintendent be at the Project site not less than ten (10) hours per day, six (6) days per week until the condition no longer exists or the phase is completed. Cost of additional workdays shall be at the expense of the contractor and will continue until satisfaction of Owner's Representative:
 - a. Should any phase not be accomplished in accordance with the Contract Schedule.
 - b. Should the Contract Schedule indicate in the opinion of Owner's Representative that Contractor is fourteen or more days behind schedule at any time during construction up until thirty days prior to scheduled completion of phase.
 - c. Should the Contract Schedule indicate, in the opinion of Owner's Representative, that Contractor is seven (7) or more days behind schedule at any time during the last thirty days prior to scheduled completion of a phase.
4. Submit Superintendent's qualifications showing ability to coordinate work, interior tenant improvements with mechanical and electrical equipment and installation, and meet additional requirements as outlined in the project bid requirements.

1.03 SAFETY

- A. Observe Owner's rules and continuously maintain safety precautions.

END OF SECTION 01 00 00

SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 PROJECT NAME AND IDENTIFICATION

Project Name: San Mateo Medical Center
222 W. 39th Avenue
SMMC Prevent Self Harm & Ligature

Project Included: **Phase 1: Psychiatric Unit 3B (3B) – Level 3**
Provide anti-ligature mitigation in patient access areas

Phase 2: Psychiatric Unit 3A (3A) – Level 3
Provide anti-ligature mitigation in patient access areas & restrooms upgrade

Phase 3: Psychiatric Emergency Services (PES) – Level 1
Provide anti-ligature mitigation in patient access areas

Architect: Smith-Karng Architecture, Inc.
Contact: Madelyn McClellan
OSHPD Project No. S191567-41-00: Permit# TBA

1.02 WORK REQUIRED BY CONTRACT DOCUMENTS

- A. Work includes interior work only, but is not necessarily limited to, the following:
1. Demolition, Cutting & Patching of existing interior walls, partitions, ceilings, etc.
 3. Removal of existing non-structural interior partitions
 4. Installation of new non-structural interior partitions
 5. Demolition of existing toilets and shower rooms
 6. Installation of new toilets, shower rooms, etc.
 7. Removal and installation mechanical ductwork, grilles, and exhaust
 8. Removal and installation of plumbing work, including medical gases
 9. Removal and Installation of electrical conduit and outlets
 10. Interior electrical work
 11. Painting & wall repair.
 12. Interior Finishes Work
 13. Fire Alarm Work
 14. Fire Sprinklers Work
 15. Signage

1.03 SUMMARY OF WORK

The project is a prevent self harm and ligature project at San Mateo Medical Center, 222 W. 39th Avenue, San Mateo, to voluntarily remove non-ligature resistant items in the patients' spaces and selected areas

of the building by remodeling existing patient toilets and patient shower/toilets, replacing doors and hardware, glazing, drinking fountains, replace lay-in ceiling with gypsum board ceiling and ligature ceiling devices, light fixtures, fire sprinkler heads, provide anti-pick sealants to existing signages. This project will involve temporary barricades, architectural, signage, mechanical, electrical, fire sprinklers and fire alarm work. This building will remain occupied and in operation during this work. Access and egress must be provided and maintained at all times for the public, patients, visitors and staff.

1.04 APPLICATIONS OF THE CONTRACT DOCUMENTS

- A. Provisions of the General Conditions of the Contract, Supplementary Conditions, and Division 1 - General Requirements of the Specifications, apply to the work specified in each Section of the Specifications.
- B. No contractual adjustment shall be due or become exigent as a result of failure to fully understand the General Conditions of the Contract, Supplementary Conditions, and Division 1 - General Requirements.
- C. Only copies of construction documents approved and stamped by OSHPD shall be on site at any time.

1.06 SCHEDULES

- A. The following specifications require the submittal of Schedules:
 - 1. Section 00 31 00 – Available Project Information
 - 2. Section 01 33 23 – Shop Drawings, Product Data and Samples

1.07 CONTRACTOR'S USE OF OWNER'S SITE

- A. General: Limit use of the premises for work of this Project to allow for Owner's occupancy and use by the public in corridors, exits and access to elevators and occupied spaces.
- B. Use of Site: Confine operations at the Site to areas permitted under the General Conditions of the Contract. Portions of the Site beyond areas of work of this Project are not to be disturbed.
- C. Access: Keep and maintain existing building entrances, driveways, roads and entrances, corridors, exits, stairways and elevators serving the premises clear and available to the Owner at all times. Do not use these areas for parking or storage of materials.
- D. Provide temporary signage & infection control measures.
- E. Schedule shutdowns to be coordinated with Facility administration, department and engineering.

1.08 SITE DECORUM

- A. Contractor shall control the conduct of its employees so as to prevent unwanted interaction initiated by Contractor's employees with Owner employees, visitors, and other individuals. Without limitation, unwanted interaction would be whistling at or initiating conversation with passerby. Further, Contractor shall control conduct of its employees as to prevent inappropriate conversations and use of inappropriate language on the job site. In the event that any Contractor employee initiates unwanted interaction or is heard in an inappropriate conversation or using inappropriate language, Contractor shall, whether upon request of Owner's Representative or on its own initiative, replace said employee with another of equivalent technical skill, at no additional cost to the Owner.

1.09 SMOKE FREE CAMPUS POLICY

- A. As a health care facility dedicated to promoting health and healing, and to providing a safe and healthy environment for its patients, visitors, and staff, the Owner has adopted a Smoke Free Campus Policy. The SMMC Smoke Free Campus Policy applies to the Campus and all other SMMC facilities regardless of location. Smoking is prohibited on Owner-owned or leased property, buildings, vehicles and moving equipment. Smoking is prohibited within 20 feet of entrances and exits of public buildings and outside any operable windows.

1.10 PARKING ACCESS

- A. Limited parking is provided for construction personnel. Contractor is responsible for obtaining, and payment of, a street-parking permit, as required from the City of San Mateo.

1.11 EXISTING PROJECT CONDITIONS

- A. Examination: Existing Drawings show existing structures, waste lines, hot and cold water lines, gas, electrical, mechanical, chilled water, and other utilities which are as accurate as possible but not guaranteed. Verify locations, levels, dimensions and features that may affect the Work. Existing installations shall be kept in service where possible. No allowance will be made in Contractor's behalf for extra expense resulting from failure or neglect in determining conditions under which Work is to be performed, or in Contractor's interpretation of information provided.
- B. Record Survey: Prior to commencing the Work, Contractor and Owner's Representative shall tour the Project Area together to examine and record damage to existing adjacent areas and improvements. This record shall serve as a basis for determination of subsequent damage due to the Contractor's operations and shall be signed by all parties making the tour. Any cracks, sags, or damage to the adjacent areas, and improvements not noted in the original survey, but subsequently discovered, shall be reported to Owner's Representative. Repairs of damage caused by the course of work will be made by the Contractor at no expense to the Owner.
- C. If any structure or utility is damaged, take appropriate action to ensure the safety of persons and property. Report any such incidents to the Owner's Representative immediately. Maintain the existing building in a safe and weather tight condition throughout the construction period.

1.12 SECURITY PROVISIONS

- A. If any hazardous material is encountered during construction, notify Owner's Representative immediately.
- B. Work Area Enclosure and Lockup: At earliest possible date, secure work area against unauthorized entrance at times when personnel are not working.
- C. Smoke detector protection is described in Section 01 51 16 – Temporary Fire Protection.

1.13 CONTRACTOR SAFETY

- A. Contractor shall comply with all applicable safety requirements.

END OF SECTION 01 11 00

SECTION 01 25 00 SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of form provided in Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.

- b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with 2019 California Building Code.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action:
- a. If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution.
 - b. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - c. After acceptance of proposed substitution, Architect will submit proposed substitution for OSHPD approval.
4. OSHPD approval:
- a. All substitutions require OSHPD approval prior to the execution of the work.
 - b. Contractor shall not substitute products not included in the construction documents or approved by OSHPD.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 10 working days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 25 00

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Submit a Preliminary Schedule of Values to Architect and Owner's Representative within 10 working days from Owner's Notice to Proceed date. Architect and Owner's Representative shall review the Preliminary Schedule of Values within 5 working days and shall recommend adjustments be made or recommend approval to the Owner. When the Preliminary Schedule of Values is approved by the Owner, this shall become the Schedule of Values. The Schedule of Values shall not be thereafter modified or amended by the Contractor without the prior consent and approval of the Owner, which may be granted or withheld in the sole discretion of the Owner.
 - 2. Contractor shall certify that the Preliminary Schedule of Values, as submitted to the Owner, is accurate and reflects the costs as developed in preparing Contractor's bid. The Preliminary Schedule of Values shall be subject to the Owner's review and approval of the form and content thereof. In the event the Owner objects to any portion of the Preliminary Schedule of Values, the Owner

shall notify the Contractor, in writing, including by email, of the Owner's objection(s) to the Preliminary Schedule of Values. Within 5 working days from the date of the County's written objection(s), Contractor shall submit a revised Preliminary Schedule of Values to the Owner, Owner's Representative and Architect for review. The foregoing procedure for the preparation, review and approval of the Preliminary Schedule of Values shall continue until the Owner has approved the entirety of the Preliminary Schedule of Values as the Schedule of Values for all of the Work of the Contract.

3. The schedule of values for all of the Work must include quantities and prices of items aggregating the total sum of the Contract amount and must subdivide the Work into component parts in sufficient detail to serve as the basis for Progress Payments during construction.
4. For Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
5. For Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.

B. Format and Content: .

1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Owner's Project Number.
 - c. Name of Architect.
 - d. Architect's Project number.
 - e. Contractor's name and address.
 - f. Date submitted.
2. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.

3. The schedule of values shall include at a minimum the following information and break down structure:
 - a. Bonds and Insurance;
 - b. Overhead and profit;
 - c. Supervision;
 - d. General Conditions;
 - e. Mobilization;
 - f. Layout
 - g. Submittals;
 - h. Demolition;
 - i. Installation;
 - j. Rough-in;
 - k. Finishes;
 - l. Testing;
 - m. Punch list and acceptance
 - n. Closeout out documentation.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent (5%) of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
6. Overhead Costs:
 - a. Include total cost and proportionate share of general overhead and profit for each line item.
 - b. Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements for a total sum to equal to not more than five percent (5%) of the Contract Amount.
8. Notwithstanding any provisions contrary to the Contract Documents, payment of the Contractor's overhead, supervision, general conditions costs, and profit, as reflected in the break down structure of the Schedule of Values, shall be paid by the Owner in equal installments, based on percentage complete, with the disbursement of Progress Payments and Final Payment.

9. Schedule of Values Revisions: Revise the schedule of values when a Change Order results in a change in the Contract Sum. Include at least one separate line item for each Change Order. Add and list Change Orders at the bottom of the Schedule of Values. Change Orders to follow the same break down structure and detail determined by the approved Schedule of Values, where lines may be required to be broken down into lines for subcontract sub-values.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and Owner's Representative and paid for by Owner.
- B. Payment Application Times: The date for each Progress Payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 1. Submit draft copy of Application for Payment 7 working days prior to due date for review by Architect and Owner's Representative.
- C. Application for Payment Forms: Use Owner's provided form for Applications for Payment. Owner requires Application for Payment form and format according to AIA Document G702 (current publication).
 1. Other Application for Payment forms proposed by the Contractor may be acceptable to Architect and Owner. Submit forms for approval with submittal of preliminary schedule of values.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated construction progress schedule.
 2. Include amounts for Work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for Work completed at time of Application for Payment.
 3. Include amounts of Change Orders issued before last day of construction period covered by application.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 1. Contractor's use of a facility for stored materials must be approved in writing by the Owner prior to storing materials in facility.
 2. Provide supporting documentation that verifies amount requested, including paid or unpaid vendor/supplier invoices, and shipment bill of materials. Match amount

- requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
 - d. Certificates of evidence of insurance and bonding for storage facility.
 - e. Owner's Representative shall be given access to the storage facility for the opportunity to inspect stored materials, signage and labeling of materials, to verify and confirm the stored materials for payment. Contractor shall have invoices, shipment bill of materials on hand for inspection. Inspection of materials shall be in person, or through digital means if necessary, prior to payment of stored materials.
- F. Transmittal: Submit signed and notarized original copies of each Application for Payment to Architect and Owner by a method ensuring receipt. Copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
1. List of Subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule.
 4. Products list (preliminary if not final).
 5. Sustainable design action plans, including preliminary project materials cost data.
 6. Schedule of unit prices.

7. Submittal schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal subcontractors.
 10. Copies of building permits.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Contractor's initial progress report.
 13. Report of the preconstruction conference.
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing one hundred percent (100%) completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting Contractor's claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion, or Certificate(s) of Substantial Compliance from OSHPD, issued previously for Owner occupancy of designated portions of the Work.
 3. Include warranty certificates indicating start date as the substantial completion date.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with all tiers of Subcontractor lien releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of documentation per Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Final settlement statement, accounting for final changes to the Contract Sum. Liquidated damages, if any, shall be included.
 4. AIA Document G706.
 5. AIA Document G706A.
 6. AIA Document G707.
 7. Evidence that all claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00
PROJECT MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in

attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in facility. Keep list current at all times.

C. Construction Schedule as required in this section.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly

progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Project closeout activities.
7. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors. Owner is not responsible for costs or schedule delays due to late RFI's.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. OSHDP Project Number.
4. Date.
5. Name of Contractor.
6. Name of Architect
7. Name of Owner's Representative.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms:

1. Attachments shall be electronic files in PDF format.

D. Architect's and Owner's Representative Action: Architect and Owner's Representative will review each RFI, determine action required, and respond. Allow seven working days for Architect's or Owner's Representative response for each RFI. RFIs received by Architect or Owner's Representative after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect or Owner's Representative of additional information.
3. Architect's action on RFI's may result in a change to the Contract Time or the contract Sum.
 - a. If contractor believe the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Owner's Representative in writing within 5 working days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

1. Project name and address.
2. Name and address of Contractor.
3. Name and address of Architect.
4. Name and address of Owner's Representative.
5. RFI number including RFIs that were returned without action or withdrawn.
6. RFI description.
7. Date the RFI was submitted.
8. Date Architect's and/or Owner's Representative's response was received.
9. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
10. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's and/or Owner's Representative action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and

notify Architect and Owner's Representative within seven days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's drawings will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. The following digital data files will be furnished for each appropriate discipline, only if necessary:
 - a. Floor plans.
 - b. Reflected ceiling plans.

B. Web-Based Project Software: Web-based project software will be provided by the Owner and managed by the Owner's Representative. Web-based Project software will be used for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Web-based Project software site includes, at a minimum, the following features:
 - a. Compilation of Project data, including Contractor, subcontractors, Architect, architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
 - b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
 - c. Document workflow planning, allowing customization of workflow between project entities.
 - d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
 - e. Track status of each Project communication in real time, and log time and date when responses are provided.
 - f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
 - g. Document management for Drawings, Specifications, and coordination drawings, including revision control.
 - h. Management of construction progress photographs.

C. to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 working days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.

- m. Submittal procedures.
 - n. Preparation of Record Documents.
 - o. Use of the premises and existing building.
 - p. Work restrictions.
 - q. Working hours.
 - r. Owner's occupancy requirements.
 - s. Responsibility for temporary facilities and controls.
 - t. Procedures for moisture and mold control.
 - u. Procedures for disruptions and shutdowns.
 - v. Construction waste management and recycling.
 - w. Parking availability.
 - x. Office, work, and storage areas.
 - y. Equipment deliveries and priorities.
 - z. First aid.
 - aa. Security.
 - bb. Progress cleaning.
3. Owner's Representative will schedule and conduct meeting, and will record and distribute meeting minutes.
- C. Project Closeout Conference: Schedule and conduct project closeout conference, at a time convenient to Owner and Architect, but no later than 20 working days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Required tests, inspections, observations, and final verified reports required for OSHPD compliance.
 - d. Procedures for completing and archiving web-based Project software site data files.
 - e. Submittal of written warranties.
 - f. Requirements for completing sustainable design documentation.
 - g. Requirements for preparing operations and maintenance data.
 - h. Requirements for delivery of material samples, attic stock, and spare parts.
 - i. Requirements for demonstration and training.
 - j. Preparation of Contractor's punch list.
 - k. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - l. Submittal procedures.

- m. Coordination of separate contracts.
 - n. Owner's partial occupancy requirements.
 - o. Installation of Owner's furniture, fixtures, and equipment.
 - p. Responsibility for removing temporary facilities and controls.
- 4. Owner's Representative will schedule and conduct meetings.
 - 5. Contractor is responsible to record and manage action items to be completed.

D. Weekly Progress Meetings:

- 1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
- 2. Agenda: Include topics for discussion as appropriate to status of Project. Review and correct minutes of previous progress meeting. Review other items of significance that could affect progress.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Status of sustainable design documentation.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of Proposal Requests.

- 16) Pending changes.
 - 17) Status of Change Orders.
 - 18) Pending claims and disputes.
 - 19) Documentation of information for payment requests.
3. Minutes: Owner's Representative will schedule and conduct meetings, and will record and distribute meeting minutes.
 4. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- E. Coordination Meetings: Conduct Project coordination meetings at the beginning of each Phase and as required. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site use.
 - 8) Temporary facilities and controls.

- 9) Work hours.
- 10) Hazards and risks.
- 11) Progress cleaning.
- 12) Quality and work standards.
- 13) Status of RFIs.
- 14) Proposal Requests.
- 15) Change Orders.
- 16) Pending changes.

- 3. Reporting: Owner's Representative will schedule and conduct meeting, and will record and distribute meeting minutes.

1.9 BUILDING INSPECTION

- A. Inspections of the project shall be implemented as required by the Office of Statewide Health Planning and Development (OSHPD), and the approved Inspector of Record (IOR).
- B. Contractor shall be available to meet and provide full access to areas requiring inspections to OSHPD field personnel, and IOR.
- C. Areas requiring OSHPD inspections shall be substantially complete prior to field personnel visit. Coordinate with IOR for pre-inspection and scheduled field visit.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 31 00

SECTION 01 31 13

PROJECT COORDINATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This Section specifies administrative and supervisory requirements for Project Coordination.

1.2 DEFINITIONS

- A. The Owner's Representative is referenced on the Project Directory in the Contract Documents and on the Agreement between the Owner and the Contractor.

1.3 ADMINISTRATION AND SUPERVISION

- A. Maintain supervision of the Work as referenced in this Section and in the General Conditions.
- B. Do not delegate responsibility for coordination to any subcontractor.
- C. Anticipate the interrelationship of subcontractors so their work is performed in a manner that minimizes interference with general progress of the Work and conforms to the Contract Documents.
- D. Coordinate all portions of the Work in order to fit space available. Before commencing such portions of the Work, prepare Diagrams or schedules for review by the Owner's Representative and Architect of Record.
- E. Schedule and arrange work to minimize inconvenience and interference to adjacent departments that are in operation during duration of this Project. Notify the Owner's Representative a minimum of 7 days in advance of work to be performed in adjacent departments.
- F. Resolve differences or disputes between subcontractors concerning coordination, interference, or extent of Work between Specification Sections.
- G. Contact the Owner's Representative with any questions regarding Project Coordination in sufficient time to provide for any necessary changes in the Work or Schedule.

1.4 BUILDING INSPECTION

- A. Inspections of the project shall be implemented as required by the Office of Statewide Health Planning and Development (OSHPD), and the approved Inspector of Record (IOR).
- B. Contractor shall be available to meet and provide full access to areas requiring inspections

to OSHPD field personnel, and IOR.

- C. Areas requiring OSHPD inspections shall be substantially complete prior to field personnel visit. Coordinate with IOR for pre-inspection and scheduled field visit.

PART 2 EXECUTION

2.1 GENERAL COORDINATION

- A. Coordinate substrates to receive work with conditions under which the work is to be performed. Report any unsatisfactory condition in writing to the Owner's Representative. Do not proceed with the work until satisfactory conditions have been corrected.
- B. Coordinate work with manufacturer's applicable instructions and recommendations for installation, to the extent that these instructions and recommendations are more explicit or more stringent than requirements are indicated in the Contract Documents.
- C. Ensure attachment and connection devices and methods for securing work. Secure work true to line and level, and within recognized industry tolerances. Allow for expansion and building movement. Provide uniform joint width in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable visual-effect choices to Owner's Representative for final decision.
- D. Recheck measurements and dimensions of the work, as an integral step of starting each installation.
- E. Coordinate installation of work during weather conditions and project conditions which will ensure the best possible results in coordination with the work. Isolate units of work when incompatible to prevent deterioration.
- F. Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.
- G. Ensure there are no obstructions to spaces and installations when required to remain clear, in accordance with applicable code requirements.
- H. Ensure piping, wiring, ducts, or other installations are not enclosed until they have been inspected and approved, and required certificates of inspection have been issued.
- I. Mount individual units of work to comply with CAC, Title 24 and ADA requirements. Refer questionable mounting height choices to Owner's Representative for final decision.
- J. Ensure anchorage, blocking, joining, and other detailing are provided as required.
- K. Coordinate removal and replacement of work which does not comply with Contract Documents. Repair or replace work or property damaged by construction operations at no increase in Contract Sum.
- L. Work of the Contract includes coordination of the entire Project from beginning of construction activity through Project close-out and warranty periods.
- M. Comply with applicable requirements of Division 16 Sections for Electrical provisions within units of General Work.

- N. Except as otherwise indicated, final connection of Electrical Services to General Work is defined as Electrical Work.
- O. Coordinate locations of existing pipes, conduits, and ducts that require removal, connection to, relocation or modification so contract work can be completed as per drawings.

2.2 COORDINATION OF FINISHES

- A. The Contract Documents indicate finish materials and colors. If discrepancies or omissions are apparent, notify the Architect and Owner's Representative.
- B. It is the intent of the Contract Documents to provide harmony in matching finishes throughout the project. Coordinate work of like materials to achieve this result by submitting pilot samples to the Architect for approval, as required in finish specifications.

END OF SECTION 01 31 13

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Shop Drawings, Product Data, and Samples, other than in connection with proposed substitutions, shall be submitted to Architect of Record only when specifically required; and Owner's Representative will not review any other such submittals.
- B. Product Data and Samples for proposed substitutions shall be submitted to Architect of Record in accordance with Section 01 25 00 - Substitution Procedures.
- C. Contractor shall be responsible for obtaining such copies of Shop Drawings, Product Data, and Samples as it may require for its own use.

1.2 RELATED REQUIREMENTS

- A. Definitions:
 1. The terms "Shop Drawings" and "Product Data" as used herein also include, but are not limited to, fabrication, erection, layout and setting drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams, all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and the positions thereof conform to the Contract Documents.
 2. As used herein, the term "manufactured" applies to standard units usually mass-produced. The term "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements. Shop Drawings shall establish the actual detail of all manufactured or fabricated items, indicate proper relation to adjoining Work, and amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure.
 3. Manufacturers' Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed in accordance with a specified product manufacturer's instructions, Contractor shall procure and distribute the necessary copies of such instructions to Architect of Record and all other concerned parties; and Contractor shall furnish, install, or perform the Work in strict accordance therewith.
- B. Submittal Schedule:
 1. A schedule for submission of Shop Drawings, Product Data, and Samples by Contractor (the "Submittal Schedule"), and their processing and return by Architect of Record, shall be agreed upon by both parties in order that the items covered by these submittals will be available when needed by the construction process and so that each party can plan its workload in an orderly manner.
 2. Contractor shall prepare the Submittal Schedule and coordinate it with the Contract Schedule. No submittals will be processed before the Submittal Schedule has been submitted to and accepted by Owner's Representative, except in such cases where the processing of submittals is required before the acceptance of the Submittal Schedule.

3. In preparing the Submittal Schedule, Contractor must first determine from the Contract Schedule the date the particular item is needed for the Work. Working backwards, Contractor will add the required number of days for shipment, time for fabrication, and similar items to determine the date of the first submittal.
4. The Submittal Schedule shall be adjusted to meet the needs of the construction process and the Contract Schedule. Submit 2 copies of the Submittal Schedule after it is completed and each time it is updated by Contractor.

1.3 SHOP DRAWINGS

- A. Present information required on Shop Drawings in a clear and thorough manner. Identify details by reference to drawing sheet and detail, schedule, or room numbers shown and specified.
- B. Number Submittals sequentially. Follow Submittal number with sequential alphabetical suffix as necessary for each resubmission. For example, the first Submittal would be "001." The second Submittal would be "002." The first resubmittal of Submittal "002" would be "002a."

1.4 PRODUCT DATA

- A. Preparation:
 1. Clearly mark each copy to identify pertinent products or models.
 2. Show performance characteristics and capacities.
 3. Show dimensions and clearances required.
 4. Show wiring or piping diagrams and controls.
- B. Manufacturers' standard schematic drawings and diagrams:
 1. Modify the standard schematic drawings and other diagrams to delete information which is not applicable to the Work.
 2. Supplement standard information to provide information specifically applicable to the Work.

1.5 SAMPLES

- A. Required Submittal Samples shall be of sufficient size and quality to clearly illustrate the following:
 1. Functional characteristics of the products, with integrally related parts and attachment devices.
 2. Full ranges of color, texture, and pattern.

1.6 CONTRACTOR'S REVIEW OF SUBMITTALS

- A. Review, mark up as appropriate, and stamp Shop Drawings, Product Data, and Samples prior to submission. Contractor's Stamped Submittals shall clearly show that they have been reviewed by Contractor for conformance with the requirements of the Contract Documents and for coordination with other SECTIONS.
- B. Determine and verify:
 1. Field measurements.

2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Conformance with Contract Documents.
- C. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Notify Owner's Representative or Architect of Record in writing, at time of submission, of any changes in the submittals from requirements of the Contract Documents.
- E. Begin no fabrication or Work, which requires submittals until the return of Owner's Representative final reviewed submittals.

1.7 SUBMITTAL REQUIREMENTS

- A. Make submittals promptly in accordance with the Submittal Schedule and in such sequence as to cause no delay in the Work or in the work of any Separate Contractor. Contractor shall ensure that he has verified the submittals, especially selected finishes, shall be available in such sizes, quantities and types for the Work. Contractor shall allow a minimum of 14 days for the Owner's Representative or Consultants to review each submission or each resubmission. Late submittal by Contractor shall not be construed as an extension of Contract Time and/or an increase in Contract Sum.
- B. Number of Submittals Required:
1. Shop Drawings: Submit one copy electronically. Electronic copy is acceptable up to a maximum of 40 pages, single face.
 2. Product Data and Non-Reproducible Submittals: Submit the number of copies which Contractor will need, plus 3 copies which will be retained by Owner's Representative.
 3. Samples: Submit the number specified in the Section which requires them. If unspecified in the Contract Documents, a minimum of 3 samples each is required. The Contractor shall retain one reviewed sample at job site for verification.
- C. Submittals shall contain:
1. Date of submission and dates of any previous submissions.
 2. Project name and number.
 3. Contract identification.
 4. The names of:
 - a. Contractor.
 - b. Owner
 - c. Architect
 - d. Subcontractor.
 - e. Supplier.
 - f. Manufacturer.
 5. Identification of the product, with the Specification Section number.
 6. Field dimensions, clearly identified as such.
 7. Relation to adjacent or critical features of the Work or materials.
 8. Reference standards, such as ASTM or Federal Specification numbers.
 9. Identification of changes from requirements of the Contract Documents.
 10. Identification of revisions on resubmittals.
 11. An 8-inch x 3-inch blank space for review stamps.
 12. Contractor's stamp, initialed or signed, certifying to the review of the submittal; verification of materials and field measurements and conditions; and compliance of the

information within the submittal with requirements of the Work and of the Contract Documents.

- D. Resubmission Requirements
 - 1. Shop Drawings and Product Data:
 - a. Revise Shop Drawings or Product Data, and resubmit as specified for the initial submittal.
 - b. Identify any changes which have been made other than those requested.
 - c. Note any departures from the Contract Documents or changes in previously reviewed submittals which were not commented upon by Owner's Representative
 - 2. Samples: Submit new samples as required for initial submittal.
- E. Distribution
 - 1. Reproduce and distribute copies (hard or electronic) of Shop Drawings and Product Data, which carry Owner's Representative's review stamp, to the following locations:
 - a. Contractor's Project site file.
 - b. Record documents file maintained by Contractor.
 - c. Separate Contractors.
 - d. Subcontractors.
 - e. Supplier or manufacturer.
 - 2. Distribute Samples which carry Owner's Representative review stamp as directed.
- F. Architect's Review
 - 1. Architect of Record and/or its consultants will review Contractor's submittals, such as Shop Drawings, Product Data, and Samples, for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of Contractor as required by the Contract Documents.

END OF SECTION 01 33 23

SECTION 01 35 13.19

SPECIAL PROJECT PROCEDURES FOR SAN MATEO MEDICAL CENTER FACILITY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- 1.1.1 Section 01 11 10 Summary of Work, for procedures regarding utility interruptions, County occupancy, Contractor's use of premises, and work restrictions.
- 1.1.2 Section 01 31 00 Project Management, and Section 013119 Project Meetings for meetings and communication.
- 1.1.3 Section 01 41 00 Regulatory Requirements for related codes.
- 1.1.4 Section 01 45 00 Quality Control for QC plan and personnel.
- 1.1.5 Section 02 41 19 Selective Demolition for pre-demolition conference and understanding of project conditions.

1.2 SUMMARY

- 1.2.1 Prior to the start of a project, the Contractor shall comply with the Contract Documents (Drawings and Specifications). Contractor must obtain approval from the Owner and Owner's Representative for any and all necessary arrangements for routing of workers, equipment, and material to the job location, schedule for elevator usage; and procedures in clean and sterile areas. In addition, the Contractor shall become familiar with applicable San Mateo Medical Center (SMMC or Facility) policies and procedures and comply with the following for the duration of the Project. The Contractor's Quality Control or Safety Manager shall designate a person responsible for assuring the implementation of environmental controls needed for environmental control and mitigation.

1.3 SUBMITTALS

- 1.3.1 Contractor's Medical Safety and Infection Control Program: Within fifteen (15) working days after Notice to Proceed with the first phase of Work, but not less than ten (10) working days before gaining access to the site to start Work, Contractor shall submit its written program with detailed outline of procedures for complying with Owner's and San Mateo Medical Center's policies and requirements. **Program compliance shall be included in the Contractor's schedule durations and all Contractor's associated costs.**

1.3.1.1 Enforcement of the protocols and procedures contained in the Medical Safety and Infection Control Program shall be implemented through measures incorporated into the Contractor's Quality Control Plan.

1.3.1.2 Contractor and Subcontractors shall, at their own expense, provide all necessary Personal Protective Equipment (PPE) which shall vary in type (for example: durable or disposable, construction grade or medical grade) to be worn and used by their employees, as per the requirements of Cal/OHSA, the County of San Mateo Health Orders for Construction, and the San Mateo Medical Center policy. **No PPE will be provided by the County or the San Mateo Medical Center facility.**

1.3.1.1.1 Refer to Cal/OSHA Interim Guidelines for General Industry on 2019 Novel Coronavirus Disease (COVID-19).

1.3.1.1.2 Refer to California Code of Regulations, Title 8, Section 5199, the Aerosol Transmissible Diseases (ATD) standard. Refer to Aerosol Transmissible Diseases Model Exposure Control Plan.

1.3.1.1.3 Should there be conflicts between current construction practices and requirements under Cal/OSHA, San Mateo County Health Orders for Construction, and the San Mateo Medical Center policies, the stricter measure shall be followed and used by Contractor and Subcontractors to protect their employees.

1.3.1.3 The Contractor shall revise and resubmit their Medical Safety and Infection Control Program for the Project to address changes requested by the County.

1.4 COMMUNICATION, COORDINATION AND PLANNING

1.4.1 The Contractor shall comply with supplemental instructions from the County concerning the SMMC medical safety and infection control. When necessary to prevent unsafe incidents, supplemental instructions may include work stoppages to reschedule and/or redirect the Work.

1.5 TRAINING

1.5.1 Provide training and orientation on infection control and prevention and Facility procedures for all personnel employed by the Contractor, subcontractors, and any other personnel entering the Facility in support of the Contractor.

1.6 UTILITY INTERRUPTIONS AND PRIOR NOTIFICATION

- 1.6.1 Shutdown or interruption of water, chilled water, steam, electrical services, natural gas, compressed air, vacuum, oxygen, nitrous oxide, or any utility system requires written notice a minimum of ten (10) working days in advance to Owner's Representative. Contractor is not authorized to interrupt utility services without this advance notification and the prior approval of the County's Representative.
- 1.6.2 See PART 3 – EXECUTION, for UTILITY SYSTEM SHUTDOWN NOTICE form.

1.7 ENVIRONMENTAL CONTROLS

- 1.7.1 Noise: All work shall be performed with a minimum of noise or disruption to normal activities in the surrounding areas. In and around patient care areas, extraordinary care and concern must be exercised. If nursing department staff, medical staff, or administrative staff indicates a problem due to these conditions, the activity must be stopped until the Owner's Representative is contacted and satisfactory arrangements are determined. Contractor will give a ten (10) working day notice for any work to be done outside the hours of 7:00am and 5:00pm.

During the construction extraordinary care and concern must be exercised to not disrupt the patient population. The Contractor shall develop a Workplan, for the Owner's approval, which demonstrates noise considerations for the patients' sleep period and the ongoing function of the facility. The following noise control procedures shall be employed:

- 1.7.1.1 Maximum increase in noise shall be limited to approximately 15db over ambient and shall not exceed regulatory standards for noise.
- 1.7.1.2 The on-site construction supervisor or superintendent shall have the responsibility and authority to receive and resolve noise complaints. A clear appeal process shall be established prior to construction commencement that will allow for resolution of noise problems that cannot be immediately solved by the on-site construction supervisor or superintendent.
- 1.7.1.3 All noise-producing project equipment and vehicles using internal combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) shall be equipped with shrouds and noise control features that are readily available for that type of equipment.

- 1.7.1.4 All mobile or fixed noise-producing equipment used on the project, which is regulated for noise output by a local, state, or federal agency, shall comply with such regulation while in the course of project activity.
 - 1.7.1.5 Electrically powered equipment instead of pneumatic or internal combustion powered equipment shall be used, where feasible and needed to control excessive noise.
 - 1.7.1.6 Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.
 - 1.7.1.7 Construction site and access road speed limits shall be established and enforced during the construction period.
 - 1.7.1.8 The hours of material transport shall be restricted to the periods and days permitted by both this contract and local noise or other applicable ordinance.
 - 1.7.1.9 The use of noise producing signals, including horns, whistles, alarms, and bells shall be for safety warning purposes only.
 - 1.7.1.10 No project related public address or music system shall be audible at any adjacent noise-sensitive receptor.
- 1.7.2 Dust: Dust control is a critical activity given the proximity of construction to Facility operations. The Contractor shall prepare a submittal that identifies source air pollution and related pollution reduction measures. The following dust control measures shall be employed:
- 1.7.2.1 Implement fugitive dust control measures as provided in Bay Area Air Quality Management District (BAQMD).
 - 1.7.2.2 Develop a staging area, vehicle and truck routes, and a daily meeting to assure all applicable control measures are established for that particular workday.
 - 1.7.2.3 Dust barriers shall be provided by the Contractor as necessary to contain dust within the construction site.
- 1.7.3 Demolition: The Contractor shall plan the demolition activities to minimize environmental impacts on facility operations in accordance with Section 02 41 19 Selective Demolition. The Contractor has the option of recycling demolished building material, but must do so in compliance with these Contract Documents and OSHPD or other Regulations. In addition to the above mitigation measures, the following applies to demolition activities:

- 1.7.3.1 Provide the County's Representative with ten (10) working day advance written notice of which building areas will be demolished next, so that they take the necessary steps to prevent airborne contaminants from entering nearby buildings/areas.
- 1.7.3.2 Identify the material that are recyclable and if possible, send to recycling facility.
- 1.7.3.3 All surface area of structures shall be saturated with water prior to start of demolition.
- 1.7.3.4 Waste and debris may be segregated, processed, and recycled to minimize waste volume and number of trips. If not possible to segregate, then procedure acceptable to County of San Mateo to Contractor's Waste Management Plan will be allowed.
- 1.7.4 Odors: When odors are a concern, arrangements shall be made by the Contractor for their containment or control. Where this is not feasible, specific arrangements should be made to minimize the disturbance of normal Facility activities. Where controllable, fumes and odors shall not be allowed to migrate to occupied areas. The Contractor shall immediately notify the Owner's Representative. If necessary, Facilities Plant and Engineering personnel shall modify adjacent air circulation systems as deemed necessary during the construction period.
- 1.7.5 Vibrations: The impacts of vibration for facility replacement and renovation activities will be limited. The most sensitive area will be surgeries and MRIs within 200 feet of construction. If vibration becomes an impact to facility operations, the Contractor shall stop operations, reschedule and/or implement the following with the approval of the County Representative:
 - 1.7.5.1 Route heavily loaded trucks and equipment away from the most sensitive medical facilities if possible.
 - 1.7.5.2 Select demolition methods not involving impact, where practicable
 - 1.7.5.3 Avoid vibratory rollers and packers near vibration-sensitive areas.
- 1.7.6 Environmental Mitigation Measures: Questions about which items are applicable to the Contractor shall be directed to the Owner's Representative.

1.8 SHIPMENTS AND MATERIALS

- 1.8.1 Equipment and materials shall not be shipped to the Facility unless specific arrangements are made for receipt and acceptance of these items. When such shipments are authorized, they are the total responsibility of the Contractor. The placement of such materials shall be limited to the specific lay-down and staging areas as defined in the Contractor's Construction Logistic Plan established for the project unless approved in advance by the Owner. The County accepts no

responsibility for the receipt, storage, or protection of the Contractor's materials and equipment.

1.9 SALVAGE AND DISPOSAL

- 1.9.1 All existing property of the Facility that is removed from the construction site and has been identified to be salvaged by the County shall be delivered to a secure site as specified by the Owner.
- 1.9.2 Construction debris, or material that has no redeemable value, is to be placed in Contractor-furnished refuse bins for safe and legal removal from the premises. Facility refuse bins may not be utilized unless so authorized by the Owner.

1.10 PARKING

- 1.10.1 The Owner's Representative will meet with the Contractor to determine parking requirements.
- 1.10.2 The primary parking and storage area shall be designated areas.
- 1.10.3 The Owner's Representative will notify SMMC Plant & Engineering Department of parking area proposed to be used by construction personnel if at variance with this procedure.
- 1.10.4 Contractor and related personnel shall park in authorized areas only.
- 1.10.5 Parking in staff and visitor parking spaces is prohibited.

1.11 SANITARY

- 1.11.1 Contractor shall provide temporary toilet and hand washing sanitary facilities adjacent to all projects. The Contractor will not be allowed to use the Facility restroom facilities whether in existing facilities or those being constructed.
- 1.11.2 Contractor shall submit proposed location of temporary toilet(s) to the Owner's Representative for Owner approval.
- 1.11.3 Construction personnel will not be allowed to use the Facility restroom facilities for personal or equipment clean-up.
- 1.11.4 Sanitary facilities shall be in accordance with OSHA regulations.

1.12 CAFETERIA AND FOOD

- 1.12.1 Construction personnel will not be allowed access to the Facility cafeteria.
- 1.12.2 Construction personnel shall police their own areas. All cups, cans, paper, wrappers, and discarded food must be placed in trash receptacles at the end of each break.

1.12.3 Contactors shall submit the proposed location of any break and eating areas, which shall be outside of the area under construction or Project boundaries, to the Owner's Representative for approval.

1.12.4 Construction personnel are not allowed to have food within the facilities, whether those facilities exist or are under construction.

1.13 BADGES

1.13.1 Badges shall be worn by all of the Contractor's personnel and all of their subcontractors' personnel.

1.13.2 Special badges shall be issued to construction personnel to identify management positions and when the term of construction exceeds six months.

1.14 PHONES

1.14.1 No cellular telephones shall be operated in staff's work areas.

1.14.2 Construction personnel shall pay for separate phone services. Pay phones are not available for Contractor use. Pay phones on site are to be reserved for staff, patients and their families.

1.15 SMOKING AND TOBACCO

1.15.1 Smoking is not permitted indoors.

1.15.2 Smoking is not permitted within the facilities under construction.

1.15.3 Smoking is permitted in designated areas. Contractor to contact the Owner for approved smoking areas.

1.15.4 All ashes and cigarette butts must be deposited in approved receptors.

1.15.5 No chewing tobacco or spitting of tobacco is permitted.

1.16 ELEVATORS

1.16.1 The Owner or Owner's Representative will inform the Contractor as to which elevators will be available for use.

1.17 SECURITY

1.17.1 All personnel must obey and act immediately upon any request by Facility security.

1.17.2 A list of emergency phone numbers will be provided by the SMMC Plant & Engineering Department.

1.18.1 General

1.18.1.1 Watch for visitors and staff.

1.18.1.2 Work only where there is a positive barrier separation between construction activities and others.

1.18.1.3 Clean up all areas immediately in occupied areas.

1.18.1.4 Do not drape cords across corridors. All cords must be attached to the ceiling or taped to the floor (use tape with non-marring adhesive).

1.18.1.5 Maintain a minimum of 8'-0" clear within all corridors.

1.18.1.6 Do not leave materials or equipment in the corridor.

1.18.2 Safety equipment and consideration should include, but are not limited to:

1.18.2.1 Anyone known to be under the influence of alcohol or drugs shall be dismissed from the Project at once and not be allowed to return.

1.18.2.2 Offensive language is not permitted in any area where it may be overheard by staff or visitors.

1.18.2.3 Provide adequate emergency first aid equipment.

1.18.2.4 Post location and emergency phone numbers for local medical care.

1.18.2.5 Monitor safe ladder usage.

1.18.2.6 Provide exhaust controls for equipment.

1.18.2.7 Monitor noise levels and establish safe limitations.

1.18.2.8 Ensure adequate ventilation for air contaminants.

1.18.2.9 Insist on personal protective equipment (PPE), such as hard hats, safety shoes, and eye, ear, and face protection equipment.

1.18.2.10 Safety nets, belts, and lifelines shall be used, as appropriate.

1.18.2.11 Provide adequate emergency fire protection equipment.

1.18.2.12 Post location and emergency phone numbers for local fire departments.

1.18.2.13 Provide safe storage for all flammable and combustible materials.

- 1.18.2.14 Insist on safe and proper use of hand power tools and electrical drop cords.
 - 1.18.2.15 Operation of cranes, derricks, and hoists should be in accordance with manufacturer's recommendations and appropriate ANSI and Cal/OSHA regulations.
 - 1.18.2.16 All construction operations and personnel are subject to CAL-OSHA and the SMMC Environmental Health & Safety regulations.
 - 1.18.2.17 Provide adequate barricades and safety lighting at all open trenches adjacent to public access (must accommodate proper warning for blind persons).
 - 1.18.2.18 Properly fence or barricade entire confines of project site so as to avoid public access or unauthorized personnel.
 - 1.18.2.19 All wall, floor, and ceiling penetrations shall be sealed to maintain fire and smoke ratings in accordance with CBC, NFPA 99 and *Life Safety Code*.
 - 1.18.2.20 All emergency exit passages must be maintained free of obstructions.
 - 1.18.2.21 Provide barricades and containment barriers in accordance with the scope of Work of the Construction Documents (Drawings and Specifications).
- 1.18.3 Fire Prevention During Welding, Cutting, and Other Hot Work
- 1.18.3.1 All hot work shall be in accordance with the Facility's requirements and procedures in this Section.
 - 1.18.3.2 Hot work includes welding, heat treating grinding, thawing pipe, powder-driven fasteners, hot riveting, and similar applications producing a spark, flame, or heat.
 - 1.18.3.3 Hot work shall be performed in a designated area that is approved for hot work by the Owner or Owner's Representative.
 - 1.18.3.4 The Contractor shall ensure that only approved apparatus, such as torches, manifolds, regulators, or pressure-reducing valves, and acetylene generators, are used.
 - 1.18.3.5 The Contractor shall ensure that all individuals involved in hot work are:
 - 1.18.3.5.1 Trained in the safe operation of their equipment and the safe use of the process.

1.18.3.5.2 Have an awareness of the inherent risks involved and understand the emergency procedures in the event of a fire.

1.18.3.5.3 Are aware if any special risks, such a flammable materials or hazardous conditions at the hot work site.

1.18.3.6 See PART 3 – EXECUTION, for HOT WORK PROCEDURE.

1.18.4 Emergency Codes Procedures

1.18.4.1 Emergency Codes are announced over the public address system. Any and all times that a Code is announced:

1.18.4.1.1 Do not use the elevators.

1.18.4.1.2 Quickly remove all equipment and obstructions from corridors and doorways.

1.18.4.1.3 Maintain these conditions until “code clear” is announced.

1.18.5 Alarms

1.18.5.1 Fire alarm signals are initiated manually or automatically through smoke and heat sensing devices.

1.18.5.2 Construction activities often create dust or smoke, which will activate the fire alarm system. Prior to conducting any work, notify the Owner’s Representative of the scope of work, the duration and location of the work, and determine if the work will create dust or smoke. If the work will create dust or smoke, proceed as follows:

1.18.5.2.1 For localized operations, cover the smoke detector with a dust cover approved by the Owner and/or Regulatory Agency. Remove promptly when work is complete.

1.18.5.2.2 For larger areas, the detection system must be disabled. This is to be done only by the Facility’s Engineering staff. Even though the system is disabled, dust covers must be installed on all area smoke detectors.

1.17.5.2.1.1 Contractor shall provide a continuous fire-watch until the system is restored.

1.17.5.2.1.2 Remove dust covers promptly when work is complete.

1.17.5.2.1.3 Detection system shall be restored to proper working order prior to releasing the fire-watch

1.17.5.3 See PART 3 – EXECUTON for FIRE WATCH

PROTOCOL/PROCEDURE.

1.18.6 Interim Life Safety Measures

1.18.6.1 Interim Life Safety Measures (ILSMs) are a series of 11 administrative actions required to temporarily compensate for the significant hazards posed by existing NFPA 101 (current year) *Life Safety Code (LSC)* deficiencies or construction activities. Implementation of ILSM is required in or adjacent to all construction areas and throughout buildings with existing *LSC* deficiencies. ILSMs apply to all personnel (including construction workers), must be implemented upon project development, and must be continuously enforced through construction and project completion. ILSMs are intended to provide a level of life-safety comparable to that described in Chapters 1-7, 31 of NFPA 101, and the applicable occupancy chapters of the *LSC*. Each ILSM action must be documented through written policies and procedures of SMMC.

1.18.6.2 See PART 3 – EXECUTION for SMMC ISLM Policy and Procedures

1.18.6.3 The Contractor must maintain the ILSM Daily Monitoring Form on site for inspection by SMMC Environmental Health and Safety (EH&S) and submit it to the Owner's Representative and the SMMC Plant & Engineering Department monthly and provide a complete set compiled as a report at each project close-out.

1.18.6.4 Fire Drills shall be conducted in the construction zones and areas adjacent to the construction zones.

1.18.7 Infection Control

1.18.7.1 Infection control is critical in all facility areas. Dust in ceilings and dust potentially entrained into buildings, as well as construction debris, can contain fungal spores or bacteria which, if inhaled by staff or visitors, can cause pneumonia and even death. Construction, demolition, remodeling and landscaping activities in and around hospitals have been implicated as a risk factor for certain nosocomial infections in patients, especially those who are immunosuppressed or immunocompromised patients. Inadvertent exposures to environmental pathogens (e.g., *Aspergillus* spp. Ad *Legionella* spp.) or airborne pathogens (e.g., *Mycobacterium tuberculosis* and varicella-zoster virus) can result in adverse patient outcomes and cause illness among health care workers. The most notable organism is aspergillus, a fungus ubiquitous in ceiling and wall spaces where dust has accumulated. Activities that disturb accumulation of dust may cause fungal spores to become airborne, inhaled by the susceptible individual, and cause disease.

1.18.7.2 Patients most at risk include those with congenital or acquired immunodeficiency, premature neonates and those receiving immunosuppressive therapy.

1.18.7.3 Activities that disturb the environment where settled dust is found may cause spores to become airborne and increase risk for nosocomial infection. Activities include:

1.18.7.3.1 Demolition, construction activities, grading, excavation, landscaping or remodeling,

1.18.7.3.2 Exposure of ceiling spaces, pipe chases, etc. and/or

1.18.7.3.3 Storage and removal of uncovered or partially covered debris from construction areas.

1.18.7.4 See PART 3 - INFECTION CONTROL, for Policy and Procedures.

1.18.8 Project Inspector

1.18.8.1 Provision of inspectors by the Owner, County, or by Office of Statewide Health Planning and Development (OSHPD), Fire Marshal, or other Regulatory Agency pursuant to provisions of this section shall be subject to following:

1.18.8.1.1 Contractor shall allow inspectors full access to project at all times where Work is in progress. Owner's Representative shall accompany Contractor and inspector.

1.18.8.1.2 Contractor shall not take any direction, approvals or disapprovals from inspectors.

1.18.8.1.3 Contractor shall not rely on inspectors to ensure Work is completed in accordance with Contract Documents.

1.18.8.2 Acts or omissions of any inspector (including, without limitation, inspector's failure to observe or report deficiencies in Contractor's Work) shall not relieve Contractor from its responsibility to complete Work in accordance with Contract Documents.

1.18.9 Directory For Assistance

1.18.9.1 A list of emergency phone numbers will be provided by the SMMC Facilities Plant & Engineering Department.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 INTERIM LIFE SAFETY MEASURES (ILSM) POLICY AND PROCEDURES

3.1.1 PURPOSE

To define the Interim Life Safety Measures (ILSMs) implemented to protect occupants during periods when the Life Safety Code is not met or during periods of construction.

3.1.2 POLICY

San Mateo Medical Center will institute and document Interim Life Safety Measures to temporarily compensate for hazards posed to buildings and grounds during construction and at any time there is a deficiency in meeting the Life Safety Code. The deficiencies are evaluated using the ILSM Evaluation Criteria documents. ILSMs are proactive administrative actions that are special measures to compensate for increased life safety risk. These measures may include deficiencies identified by authorities having jurisdiction during inspections.

3.1.2.1 The ILSMs which are to be implemented are described below, and may not be limited to:

1. Ensuring free and unobstructed exits. Staff receive additional information and communication when alternative exits are designated. The hospital will post signage identifying the location of all alternative exits to everyone affected.
2. Buildings or areas under construction must maintain escape routes for construction workers at all times. Means of exiting construction areas are inspected daily.
3. Ensuring free and unobstructed access to emergency services and for fire, police, and other emergency forces.
4. Ensuring fire alarm, detection, and suppression systems are in good working order. A temporary but equivalent system must be provided when any fire system is impaired.
5. Temporary systems must be inspected and tested monthly. The completion date of the tests will be documented.
6. Ensuring temporary partitions are smoke tight and built of noncombustible or limited combustible materials that will not contribute to the development or spread of fire.
7. Ensure additional fire-fighting equipment is available and if welding, or braising, obtain a hot permit from SMMC Facilities Plant & Engineering.
8. Provide additional training on fire-fighting equipment. Providing additional training to those who work in the hospital on the use of fire-fighting equipment.
9. Developing and enforcing storage, housekeeping, and debris removal practices that reduce the building's flammable and combustible fire load to the lowest feasible level.

10. Conducting a minimum of two fire drills per shift per quarter. Fire drills shall be conducted in the construction zones and areas adjacent to construction zones.
11. Increasing surveillance of buildings, grounds, and equipment with special attention to excavations, construction areas, construction storage, and field offices.
12. Training of relevant staff to compensate for impaired structural or compartmentalization features of fire safety.
13. Conducting organization wide education safety programs to promote awareness of fire-safety building deficiencies, construction hazards, and ILSMs.
14. The hospital (usually PBX or Facilities) notifies the fire department or the off-site monitoring company and initiates a fire watch when a fire alarm is out of service for more than 4 hours in a 24-hour period and/or when a fire sprinkler system is out of order more than 10 hours in a 24-hour period in an occupied building. Notifications and fire watch times will be documented. Additional details on what is entailed in fire watch protocols is included in the Fire Watch Policy.
15. The Interim Life Safety Measure (ILSM) policy will include criteria for evaluation when and to what extent SMMC follows special measures to compensate for increased life safety risk.

3.1.3 PROCEDURE

Each of the above 15 Interim Life Safety Measures will be implemented as per the following procedure:

3.1.3.1 If exits are compromised, alternate exits will be identified and then signs will be installed to guide visitors and staff alongside the safest route. Provide “No Exit” signs and provide new evacuation maps.

3.1.3.2 Special emphasis will be given in these areas to ensure free access to all.

3.1.3.2.1 A temporary, but equivalent system shall be provided when any fire system is impaired. Temporary system must be inspected and tested monthly. Documentation of Contractor’s temporary fire system equivalent plan and inspecting and testing reports are to be submitted to the Chief of Plant & Engineering.

3.1.3.2.2 Inspector of record to ensure compliance and document. Notification is given to all construction personnel before starting the project(s) or the Work.

3.1.3.2.3 Additional fire extinguishers to be placed in the compromised area by Facilities Plant and Engineering and staff training to be done at the time of delivery and as needed.

3.1.3.2.4 Notification of applicable measures will be given to all construction personnel before starting project(s) or the work. The SMMC’s Chief of Plant & Engineering, Safety Officer, and Security Office will perform additional monitoring in construction and adjacent areas.

3.1.3.2.5 All major projects will have additional surveillance and monitoring of affected areas with emphasis on excavations, pedestrian and vehicle traffic flow, equipment and supply storage areas. Excavations are to be barricaded and well lit at night. Construction areas must be cleaned up each day.

3.1.3.2.6 Notification shall be given to the Chief of Plant & Engineering or their designees and the Safety Officer on any compartmental deficiencies. Staff training will be performed as needed.

3.1.3.2.7 The staff will be kept current on any affected ILSM's and associated actions through email and/or at the appropriate meetings.

3.1.4 DOCUMENTS/FORMS

3.1.4.1 Attachment 1 – INTERIM LIFE SAFETY MEASURES (ILSM) MATRIX FOR EXISTING SIGNIFICANT LSC DEFICIENCIES OR CONDITIONS

3.1.4.2 Attachment 2 – INTERIM LIFE SAFETY MEASURES (ILSM) MATRIX KEY

3.1.4.3 Attachment 3 – INTERIM LIFE SAFETY MEASURES EVALUATION CRITERIA

3.1.4.4 Attachment 4 – INTERIM LIFE SAFETY DAILY MONITORING

3.1.4.5 Attachment 5 – CONTRACTOR CHECKLIST FOR RELATED INTERIM LIFE SAFETY MEASURES AT THE SMMC FACILITY

3.1.4.5.1 The Contractor must maintain originals or copies of the Interim Life Safety Daily Monitoring Form on site for inspection by the Safety Officer and submit it to the Owner, Owner's Representative and the Plant and Engineering Department monthly and provide a complete set compiled as a report at each project phase completion or project close-out.

3.2 UTILITY SYSTEM SHUTDOWNS

3.2.1 DOCUMENTS/FORMS

3.2.1.1 Attachment 6 – UTILITY SYSTEM SHUT DOWN NOTICE

3.3 LIFE SAFETY – ABOVE CEILING WORK

3.3.1 PURPOSE

To ensure the safety of our patients, staff and visitors during above ceiling work and to meet regulatory requirements.

3.3.2 POLICY

San Mateo Medical Center is required by the 2012 Life Safety Code to ensure penetrations in fire and smoke partitions are sealed and to properly support wires above ceiling spaces. The penetrations and improperly supported wires are the result of utilities such as conduit, pipe, duct work, communication lines and television lines being installed without being properly supported.

3.3.3 PROCEDURE

3.2.2.1 An Above Ceiling Work Permit (see attached permit) is required for any work performed other than by SMMC Facilities Plant & Engineering personnel above the ceiling level within the main building at San Mateo Medical Center, and must be secured prior to beginning any work. The permit may be secured from the Facilities Plant & Engineering Department.

3.2.2.2 The permit must be completely filled out by the person requesting the permit and authorized by the Chief of Plant & Engineering or his designee. The permit must be in the possession of the person(s) performing the work at all times while work is under way.

3.2.2.3 The person performing the work must notify the appropriate inspector prior to the commencement of work, before any work is concealed and after the work is completed. Work may not proceed until the inspections are complete.

3.2.2.4 Prior to beginning of any work, the area must be inspected by the persons desiring or performing the work and the appropriate inspector. Any pre-existing conditions should be noted on the permit.

3.2.2.5 All penetrations and attachments must be made in accordance with the California Building Code (CBC), the current Life Safety Code (as adopted by OSHPD), and the UL Fire Resistance directory.

3.2.2.6 Supporting work from the ceiling grid is prohibited.

3.2.2.7 For safety and security purposes, any and all tools or other sharp objects should be in the possession of the workers at all times and/or locked/secured.

3.2.2.8 Infection Control must be consulted separately for an Infection Control Risk Assessment (ICRA) and permit. See 3.6 INFECTION CONTROL.

3.3.3 DOCUMENTS/FORMS

3.3.1 Attachment 7 – ABOVE-CEILING WORK PERMIT

3.4 LIFE SAFETY – HOT WORK

3.4.1 PURPOSE

To define the steps that should be taken to issue a hot work permit to lessen the possibility of accidental fires in or around the hospital.

3.4.2 PROCEDURE

- 3.4.2.1 The Facilities Chief of Plant & Engineering or his designated Supervising Stationary Engineer shall be solely responsible for issuing “hot work” permits to outside contractors and County Crafts personnel. The permit must be issued prior to the start of the work and returned to the Chief or Supervising Stationary Engineer to determine if the area is free from combustible or hazardous materials and that adjacent equipment and operations are considered safe from any effects of the work.
- 3.4.2.2 Before a “hot work” permit is issued, the work shall be surveyed by the Chief of Plant & Engineering or the Supervising Stationary Engineer to determine if the area is free from combustible or hazardous materials and that adjacent equipment and operations are considered safe from any effects of the work.
- 3.4.2.3 All job sites involving “hot work” shall have a portable fire extinguisher of appropriate size and type at hand in the event an accidental fire is started. If the Chief of Plant & Engineering or the Supervising Stationary Engineer deems it necessary, a separate fire watch shall be maintained during the course of any “hot work”
- 3.4.2.4 The Chief of Plant & Engineering of the Supervising Stationary Engineer shall write on the back of the permit any special conditions that must be met before the work proceeds. The permit is to be displayed in an open and prominent location at the job site.
- 3.4.2.5 No “hot work” shall be performed on natural gas or oxygen lines unless the lines have been isolated, purged, and inspected by the Supervising Stationary Engineer and a permit has been issued for the work.
- 4.4.2.6 During the course of all maintenance and contractor work, the job site shall be kept free of combustible material when “hot work” is in progress. This includes volatile and hazardous liquids which when in the presence of heat will give off combustible or toxic vapors.
- 4.4.2.7 No welding of flam cutting of ventilation ducts shall be permitted under any circumstances.
- 3.4.3 DOCUMENTS/FORMS
 - 3.4.3.1 Attachment 8 – HOT WORK PERMIT

3.5 LIFE SAFETY – FIRE WATCH PROTOCOL

3.5.1 PURPOSE

To initiate appropriate action to ensure the safety and well being of the patients, residents, staff and visitors in the event of the Fire Alarm and/or Sprinkler System compromise or malfunction. Once the fire alarm and/or sprinkler system malfunction has been detected, the Fire Marshal and Facilities Chief of Plant & Engineering and/or the Supervising Stationary Engineer will be notified. The Supervising Stationary Engineer will immediately begin investigation and repair of the malfunction.

3.5.2 POLICY

The Fire Watch Protocol will be initiated when indicated according to the Interim Life Safety Measure (ILSM) policy designed to address identified Life Safety Code deficiencies that cannot be immediately corrected or during periods of construction. ISLM are essential when a fire alarm system is out of service more than 4 hours in a 24-hour period and/or when a fire sprinkler system is out of order more than 10 hours in a 24-hour period. The SMMC Safety Officer or designee, Chief of Plant & Engineering or designee and the local Fire Marshal/Fire Department will be notified by PBX.

Upon detection of a Fire Alarm and/or Sprinkler System malfunction, the Fire Impairment Coordinator (a Facility Engineer), or as designated by the Facilities Chief of Plant & Engineering, will immediately begin an investigation and take action to repair.

This policy is applicable to all SMMC facilities including off-site clinics.

3.5.2 PROCEDURE

3.5.2.1 Monitoring

Every hour, the designated person on duty will monitor the building by walking the unoccupied and occupied areas to check for the following conditions and complete the Fire Watch Log. The designated person/personnel may include Security, Facilities Plant & Engineering, qualified Contractor, and/or SMMC Nursing Supervisor Staff that are knowledgeable and trained to perform fire watch functions . Areas include:

1. Hallways, patient/resident rooms, mechanical/electrical spaces, roofs and unoccupied spaces are free of fire hazards, combustibles or any other conditions that could develop into a fire hazard.
2. Minimum clearances are maintained on hallways and exit pathways.
3. Fire Extinguishers are full and dates are current.
4. Malfunctioning equipment and supplies are out of service and labeled.
5. Resident smoking confined to the smoking patio only and adherence to County/hospital smoking policy.
6. Walls checked for hot spots
7. All areas checked for signs of smoke and/or combustion

3.5.2.2 The Fire Watch Protocol will be maintained until the Fire Marshal has given clearance.

3.5.3 DOCUMENTS/FORMS

3.5.3.1 Attachment 9 – FIRE WATCH LOG

3.6 INFECTION CONTROL

3.6.1 GENERAL REQUIREMENTS

- 3.6.1.1 The Contractor shall prepare an Infection Control Plan for the entire construction project. The Facility's Infection Control Risk Policy and Procedures requires an Infection Control Risk Assessment (ICRA) to be completed for each OSHPD project (and as required for each phase of a project). The Contractor must meet, at a minimum, the Infection Control requirements of SMMC in these specifications, but not less than current code regulations and OSHPD requirements.
- 3.6.1.2 Infection Control will participate in project kick off meeting that includes infection control practitioners/staff. Infection Control department personnel will participate in infection control risk assessment(s) for the preparation of the Infection Control Plan. Infection Control will be concerned or involved with:
 - 3.6.1.2.1 Relocation decisions regarding patient care areas, storage areas, etc.
 - 3.6.1.2.2 Storage of moveable or modular equipment.
 - 3.6.1.2.3 Staff and patient traffic patterns for the duration of the project.
 - 3.6.1.2.4 Construction waste containment, transport and disposal. Accommodation of personal protection equipment (PPE).
 - 3.6.1.2.5 Number and placement of (temporary) hand washing facilities.
 - 3.6.1.2.6 Water supply and plumbing.
 - 3.6.1.2.7 Air handling systems.
 - 3.6.1.2.8 Surfaces than can be effectively cleaned (in clinical areas).
- 3.6.1.2 The Contractor shall implement the conditions of approval identified through the ICRA Permit issued by the Infection Control Officer. The Contractor shall incorporate these requirements into their Quality Control Plan.
- 3.6.1.3 The Facility's Infection Control Officer may modify infection control requirements based on health and medical safety needs. Any modification does not relieve the Contractor of compliance with proper control procedures. The Facility's Infection Control, or the Owner's Representative, will have the authority to stop work immediately should a clear infection control related violation be observed during performance of the Work.
- 3.6.1.4 Based on the degree of risk and the type of work to be performed, ICRA conditions of approval may include, but are not limited to, the following construction requirements:

- 3.6.1.4.1 Before any construction on project site begins, all workers who will be working on site shall attend a mandatory meeting held by the Infection Control Officer or their authorized staff, for training and instruction on precautions to be taken. Contractor is responsible for making sure that all workers and Subcontractors receive the training.
- 3.6.1.4.2 Medical waste removal. Prior to the start of the construction, hospital personnel must remove any medical waste, including sharps containers, from the areas to be renovated or constructed. Infection control department will be notified immediately if unexpected medical waste is found in the construction area.
- 3.6.1.4.3 Develop and implement an appropriate airborne testing program for fungi and respirable dust including baseline, during construction, and post-construction measurements. All samples will be submitted to an independent laboratory accredited by the American Industrial Hygiene Association (AIHA) under the Environmental Microbiology Laboratory Accreditation Program (EMLAP).
- 3.6.1.4.4 Disturbed or removed materials shall be cautiously removed, contained and immediately removed to the Contractor's rubbish containment area.
- 3.6.1.4.5 Traffic control of construction in public areas. Designated entry and exits will be identified for the project and hours for construction will be determined. All egress paths will be free of construction equipment and debris. Only designated elevators will be used for construction activities during scheduled times.
- 3.6.1.4.6 In areas undergoing or potentially affected by construction, renovation, excavation, grading or landscaping activities:

HVAC and MEP Systems

- 3.6.1.4.4.1 The existing supply ductwork serving the space shall be partially restricted to reduce the incoming air, as necessary. Temporary filter(s) shall be installed on the ducted returns to collect dust particles from the construction area(s). The overall construction space shall be placed under a negative pressure, when feasible, to minimize contaminating the adjacent areas. Filter media are to be changed by the Contractor as required to maintain negative

pressure. Pressure relationships will be checked and logged daily by the Contractor.

3.6.1.4.4.2 Maintain negative air pressure within work site utilizing HEPA-equipped air filtration units. Negative air pressure within the construction zone shall cause no disruption of the air systems of the adjacent areas, depending on project location.

3.6.1.4.4.3 Constant negative pressure, if required within the construction zone, will be monitored with an alarm device, which will be maintained and monitored by construction personnel. Optimally, construction zone air will be exhausted directly with no potential for re-circulation. If an existing exhaust system cannot be located and a tie into re-circulated air system is necessary, a pre-filter and high efficiency filter (95%) will be used prior to exhaust to prevent contamination of the duct. Ventilation filters will be changed as needed. Industrial grade HEPA equipped air filtration machines capable of filtering 300-800 CFM of an air flow into construction area not less than 100 FPM at barricade entrances with doors fully open. HEPA equipment shall run continuously.

3.6.1.4.4.4 Use wet method to control dust while cutting.

3.6.1.4.4.5 Control moisture of materials during the construction process.

3.6.1.4.4.6 Seal unused doors with non-marring duct tape.

3.6.1.4.4.7 Isolate HVAC system in work area to prevent contamination of duct system.

Barriers

3.6.1.4.4.8 Complete all critical barriers before construction begins.

3.6.1.4.4.9 Seal holes, pipes, conduits, and punctures prior to the start of work.

- 3.6.1.4.4.10 Barriers must be installed whenever a worker must crawl into or place equipment through any ceiling space in staff or public areas.
- 3.6.1.4.4.11 Barriers must be completely sealed from floor to ceiling to prevent dust from seeping into staff and public areas. The seals must be maintained throughout the construction period.
- 3.6.1.4.4.12 When openings are made into existing ceilings, provide fire retardant, dust-tight polyethylene covering sealed at edges to enclose and dust. Provide thorough cleaning of existing surfaces that become exposed to dust before County's room occupation.
- 3.6.1.4.4.13 Whenever access panels are opened for Work above ceilings, provide a polyethylene shroud, fitted tight, taped to floor and ceiling enclosing ladder and sealing off opening. All polyethylene shall be fire retardant. (Example: a "control cube" containment barrier).
- 3.6.1.4.4.14 Ceiling access panels must be closed when unattended. Any ceiling access panel opened for investigation beyond contained barriers or construction area shall be closed immediately.
- 3.6.1.4.4.15 Ceiling tiles that are removed must be covered over with plastic and sealed until replaced.
- 3.6.1.4.4.16 Construct an anteroom for cleaning equipment and clothing using a HEPA-equipped vacuum cleaner that all personnel are required to pass through as they enter and leave the work area. Alternatively, personnel can wear cloth or paper coveralls that are removed each time they leave the work area. Wet mop or HEPA vacuum the anteroom daily.
- 3.6.1.4.4.17 During demolition, dust-producing work, or work in the ceiling, disposable shoe covers

and coveralls must be worn and removed in the anteroom when leaving the work area.

- 3.6.1.4.4.18 Dust will be kept to a minimum by frequent wet-mopping and placing door mats at entrances. Adhesive walk-off mats shall be a minimum size of 24 inches by 36 inches. Adhesive mats shall be changed daily, or as necessary, to prevent accumulation of dust.
 - 3.6.1.4.4.19 Carpets at barricade entrances shall be vacuumed daily using a HEPA filter equipped vacuum cleaner.
 - 3.6.1.4.4.20 Dust tracked outside of barriers shall be removed immediately. Cleaning outside barriers will be with a HEPA filter equipped vacuum cleaner.
 - 3.6.1.4.4.21 Direct construction and debris traffic away from staff and public areas.
 - 3.6.1.4.4.22 Debris shall be removed outside of normal work hours. Debris shall be transported in tightly covered containers to contain dust.
 - 3.6.1.4.4.23 Removal of construction barriers and ceiling protection shall be done carefully, outside of normal work hours to minimize spreading of dirt and debris associated with construction. Vacuum and clean all surfaces free of dust after removal.
 - 3.6.1.4.4.24 Wipe horizontal surfaces with a Facility-approved disinfectant.
 - 3.6.1.4.4.25 Remove blockage and filters from air vents.
- 3.6.1.4.7 Problems or questions regarding construction activities should be directed to the Owner's Representative.
- 3.6.1.4.8 If any pre-existing microbiological growth is noted during construction activities, the Facility's Infection Control Officer and the Owner's Representative must be notified immediately prior to any disturbance of the material.
- 3.6.1.4.9 During any of the construction activities described above, Contractor must implement an infection compliance

monitoring program to ensure compliance with the Infection Control Plan.

3.6.1.4.10 If portable infectious material containment cubes are to be used, a monitoring, maintenance and servicing protocol must be included in the ICRA.

3.6.1.4.11 The Facility's Infection Control Officer or the Owner's Representative have authority to immediately stop work at any time if it is determined that activities or conditions or other emergency situations exist that could impact the health of staff and visitors in the Facility.

3.6.1.4.12 The Facility's Infection Control Officer or the Owner's Representative have authority to stop work at any time if it is believed or determined that work is not being performed according to these specifications or applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the County. Standby time required for resolving deficiencies shall be at the Contractor's expense.

3.6.1.5 The Contractor shall notify the Owner's Representative, Facilities Plant & Engineering, Environmental Health & Safety, and Infection Control before work begins on any construction projects adjacent to staff and visitor areas to establish all necessary and appropriate protective measures to minimize or eliminate risk of nosocomial infections. Owner and Contractor will develop a method of procedure (MOP) for such notifications.

3.6.1.6 The U.S. Department of Health and Human Services, Centers for Disease Control, (CDC) has published *Guidelines for Environmental Infection Control in Health-Care Facilities*. The Table 1 and Table 2 below, which are taken from the CDC guidelines, list the types of measures that are typically taken to implement infection control programs. These are guidelines to assist the Contractor in their Infection Control Plan submittal as noted in paragraph 3.6.1.1.

**Table 1: Strategies to Reduce Dust & Moisture Intrusion During External Demolition & Construction
(Adapted from CDC Guidelines Table 8)**

Item	Recommendation
Dust-generating Equipment	Prior to placing dust-generating equipment, evaluate the location to ensure that dust produced by the equipment will not enter any hospital building through open doorways or windows, or through ventilation air intakes.
Construction Materials Storage	Locate this storage away from the facility and ventilation air intakes.
Adjacent Air Intakes	Seal off affected intakes, if possible. Take no action without the approval of County Representative.
Environment	Determine how environmental issues may affect the project such as prevailing winds and outdoor temperatures.
HVAC Systems	Determine location of air intakes for the hospital. Consult with the Facilities Plant & Engineering Department about pressure differentials and air recirculation options; Facilities Plant & Engineering Department shall be responsible to keep the existing building air pressure positive to outside air. Contractor shall assist in determining pressure requirements. Pressure gradients between clean/dirty areas must meet current requirements. (e.g. 0.01 inches of water)
Filters	Facilities Plant & Engineering Department shall ensure that existing building filters are properly installed: <ul style="list-style-type: none"> • Contractor shall record status of existing building filters prior to beginning work. • Contractor shall change temporary and roughing filters frequently to prevent dust build-up on high-efficiency filters.
Windows	Locate any potential infiltration points pre-construction such as windows and doors. Seal and caulk to prevent entry of airborne fungal spores.
Doors	When construction activities may impact a nearby building or when working in an existing building, keep doors closed as much as possible; do not prop open; seal and caulk unused doors (i.e., those that are not designated as emergency exits). Use mats with tacky surfaces at outside entrances.
Water Utilities	Note location relative to construction area to prevent intrusion of dust into water systems. ¹
Medical Gas Piping	Ensure that these lines/pipes are insulated during periods of vibration. Isolate as much as practical.
Rooftops	Temporarily close off during active demolition/construction sites; avoid rooftops.
Dust Generation	Provide methods (e.g., misting the area with water) to minimize dust.
Immunocompromised Patients	Contractor shall coordinate work with the County to allow staff and patients to: <ul style="list-style-type: none"> • use walk-ways protected from demolition/ construction sites; avoid outside areas close to these sites; avoid rooftops.
Pedestrian Traffic	Close off entry ways as needed to minimize dust intrusion.
Truck Traffic	Reroute, if possible, or arrange for frequent street cleaning.
Education	Encourage reporting of hazardous or unsafe incidents associated with construction. Educate staff and construction workers about the importance of adhering to infection control measures during the project.

County of San Mateo – Department of Public Works
San Mateo Medical Center (SMMC)
SMMC Prevent Self Harm & Ligature Project No. P30F1
OSHPD No. S191567-41-00

¹ Contamination of water pipes during demolition activities has been associated with health-care-associated transmission of Legionella.

Table 2 – Infection Control Measures for Internal Construction & Repair Projects (Adapted from CDC Guidelines Table 9)

Item	Recommendation
Prepare for the Project	Use a multi-disciplinary team approach to incorporate infection control into the project. Conduct the risk assessment and a preliminary walk-through with project managers and staff.
Educate staff and construction workers*	Educate staff and construction workers about the importance of adhering to infection control measures during the project. Provide educational materials in the language of workers. Include language in the construction contract requiring construction workers and subcontractors to participate in infection control training.
Issue Hazard & Warning Notices	Post signs to identify construction areas and potential hazards. Mark detours requiring pedestrians to avoid the work area.
Identify Services and/or Utilities	Determine which essential services or utilities could be affected that are necessary for the delivery of patient care in the short or long term.
Relocate High-Risk Patients as Needed, If work is in or Adjacent to a PE	Identify activities occurring in sensitive areas (e.g. Surgery, Oncology, Intensive Care) and Identify target patient populations for relocation based on the risk assessment. Arrange for the transfer in advance to avoid delays. At-risk patients should wear protective respiratory equipment (e.g., a high-efficiency mask) when outside their Protective Environment (PE) rooms.
Establish Alternate Traffic Patterns for Staff, Patients, Visitors & Construction Workers	Determine appropriate alternate routes from the risk assessment. Designate areas (e.g., hallways, elevators, and entrances/exits) for construction worker use. Do not transport patients on the same elevator with construction materials and debris.
Erect Appropriate Barrier Containment	Use fire retardant prefabricated plastic units or plastic sheeting for short-term projects that will generate minimal dust. Use durable rigid barriers for ongoing, long-term projects.
Establish Proper Ventilation / Remodel Construction	Shut off return air vents, if possible, and seal around grilles. Exhaust air and discharge to the outside, if possible. If re-circulated air from the construction zone is unavoidable, use a pre-filter and a HEPA filter before the air returns to the HVAC system. When vibration-related work is being done that may dislodge dust in the ventilation system or when modifications are made to ductwork serving occupied spaces, install filters on the supply air grilles temporarily. Set pressure differentials so that the contained work area is under negative pressure. Use air flow monitoring devices to verify the direction of the air pattern. Monitor temperature, air changes per hour (ACH), and humidity levels (humidity levels should be <65%). Use portable, industrial grade HEPA filters in the adjacent area and/or the construction zone for additional ACH. Exhaust air and dust to the outside, if possible*. Keep windows closed, if possible.
Control Solid Debris	When replacing filters, place the old filter in a bag prior to transport and dispose as a routine solid waste. Clean the construction zone daily or more often, as needed. Designate a removal route for small quantities of solid debris.

Item	Recommendation
	Designate an elevator for construction crew use*. Mist debris and cover disposal carts before transport (i.e., leaving the construction zone). Use window chutes and negative pressure equipment for removal of larger pieces of debris while maintaining pressure differentials in the construction zone. Schedule debris removal to periods when patient exposure to dust is minimal.
Control Water Damage	Make provisions for dry storage of building materials. Do not install wet, porous building materials (i.e., sheet rock). Replace water-damaged porous building materials if they cannot be completely dried out within 72 hours.
Control Dust in Air and on Surfaces	Monitor the construction area daily for compliance with the infection-control plan. Protective outer clothing for construction workers shall be removed before entering clean areas. Use mats with tack surfaces within the construction zone at the entry; cover sufficient area so that both feet make contact with the mat while walking through the entry. Construct an anteroom as needed where coveralls can be donned and removed*. Clean the construction zone and all areas used by construction workers with a wet mop. If the area is carpeted, vacuum daily with a HEPA-filter equipped vacuum. Provide temporary essential services (e.g., toilets) and worker conveniences (e.g., vending machines) in the construction zone as appropriate. Damp-wipe tools if removed from the construction zone or left in the area. Ensure that construction barriers remain well sealed; use particle sampling as needed. Ensure that the clinical laboratory is free from dust contamination.
Complete the Project	Flush the main water system to clear dust-contaminated lines. Terminally clean the construction zone before the construction barriers are removed. Check for visible mold/mildew and eliminate if present. Verify appropriate ventilation parameters for the new area as needed. Do not accept ventilation deficiencies, especially in special care areas. Clean or replace HVAC filters using proper dust-containment procedures. Remove the barriers and clean the area of any dust generated during this work. Ensure that the designated air balances in the operating rooms (OR) and protective environments (PE) are achieved before occupancy. Commission the space as indicated especially in the OR and PE, ensuring that the room's required engineering specifications are met. Ensure that the building envelope has been protected at all times from moisture intrusion during construction. <i>(Example: roof or wall penetrations for MEP)</i>

*SMMC specific requirement(s).

3.6.2 PURPOSE

1. To ensure a safe environment for patients, visitors, hospital staff/personnel, healthcare workers, and construction personnel.

2. To prevent the acquisition of health-acquired infections in, patients, visitors, hospital staff/personnel, healthcare workers, and construction personnel during hospital renovation or construction activities.

3.6.3 POLICY

- 3.6.3.1 To ensure a safe environment at SMMC, planning for new construction or renovation must be reviewed by the hospital Infection Control (includes: Infection Control Committee and its Infection Control Manager and its Infection Control Practitioners) as planning commences for a project in or adjacent to patient care areas.
- 3.6.3.2 Infection Control will participate as needed with the construction project planning to review traffic flow pattern, waste disposal, required barriers, etc., as designated by the Infection Control Risk Assessment (ICRA).
- 3.6.3.3 SMMC requires all contractors, subcontractors, material suppliers, vendors, employees, or agents to be bound by these same requirements. Before any on-site construction begins, a pre-construction meeting will be held and instruction on all requirements and expectations regarding infection control in the construction area will be communicated.
- 3.6.3.4 HEPA equipped air filtration machines, not less than 100 FPM shall provide airflow into construction areas at barricade entrances with doors fully open. HEPA equipped air filtration machines shall be connected to normal power and shall run continuously.
- 3.6.3.5 SMMC Facilities Plant and Engineering or Infection Control may modify performance requirements for certain activities. Modifications made by SMMC do not relieve the Contractor of compliance with proper infection control procedures.
- 3.6.3.6 Facilities Plant and Engineering or designee will routinely monitor construction/renovation areas.
- 3.6.3.7 Infection Control will monitor construction areas periodically. Environmental monitoring will be performed by SMMC if appropriate. The Infection Control will monitor biological counts in the vicinity of the construction area or Work on an as needed basis. Whenever safe levels are exceeded, the County Representative will be notified to correct conditions immediately. Failure of Contractor to correct such deficiencies may result in a fine of \$500 issued to contractor by SMMC, and/or fine issued by other regulatory agencies.

- 3.6.3.8 All work shall be stopped on the project whenever a hazardous infection control deficiency exists.
- 3.6.3.9 Infection Control will offer education on health hazards of fungal spores to project managers and department managers/staff.
- 3.6.3.10 An Infection Control Permit is required for Class III or higher procedures and any activity in a group 4 Infection Control Group.
- 3.6.3.11 Facilities Plant and Engineering Department will confirm specified air velocity whenever barricades are erected or modified on an “as needed” basis. Plant and Engineering Department will make sure air quality is monitored “as needed” throughout the project.
- 3.6.3.12 Contractors entering sterile/invasive procedure areas will be provided with a disposable jump suit, head covering and shoe coverings, which must be removed prior to exiting the work area.

3.6.4 AUTHORITY

- 3.6.4.1 The SMMC Chief of Plant & Engineering, and/or Infection Control Officer has the authority to stop work of any project when a breach of the Infection Control policy and procedures for construction has been detected.

3.6.5 DEFINITIONS AND CRITERIA

3.6.5.1 Construction activity types.

The construction activity types are defined by the amount of dust generated, the duration of the activity, and the amount of shared HVAC systems. Contact Safety Department, Plant Operations Department, and Infection Control Department if any activity is questionable under these guidelines.

Type A – Inspections and Non-Invasive Activities: Includes, but is not limited to, removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet, painting (but not sanding), wall covering, electrical trim work, minor plumbing and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.

Type B – Small scale, short duration activities which create minimal dust: Includes, but is not limited to, installation of telephone and computer cabling, access to chase spaces, cutting of walls or ceiling where dust migration can be controlled.

Type C – Any work which generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies: Includes, but is not limited to, sanding of wall for painting or wall coverings, removal of floor coverings, ceiling tiles and casework, new wall construction, minor ductwork or

electrical work above ceilings, major cabling activities, and any activity which cannot be completed within a single work shift.

Type D – Major demolition and construction projects: Includes, but is not limited to, activities which require consecutive work shifts, heavy demolition or removal of a complete ceiling system and new construction.

3.6.5.2 Infection Control Risk Groups. See Table 3A. below.

Table 3A – Infection Control Risk Groups.

GROUP 1 LOWEST	GROUP 2 MEDIUM	GROUP 3 MEDIUM-HIGH	GROUP 4 HIGHEST
1. Office areas 2. Engineering 3. Environmental Services 4. Medical Records	1. All other patient care units (e.g., ultrasound, rehabilitation) 2. Admitting 3. Cafeteria 4. Laboratory	1. ED/Urgent Care 2. Radiology/MRI 3. PACU 4. Nuclear Medicine 5. Admission/discharge units 6. EKG,EEG, RT 7. Dialysis, 8. Wound Care 9. Central supply 10. Lab 11. Pediatrics, 12. Med Surg 13. Rehab Services – P.T.	1. Surgery 2. Cardiac catheterization 3. Intensive Care Units 4. Oncology 5. Anesthesia 6. Endoscopy 7. Pharmacy admixture 8. Radiation therapy 9. Sterile processing

3.6.5.3 Construction Activity/Infection Control Matrix. Infection Control consultation is required when the construction activity and risk level indicates that Class III and Class IV infection control procedures are necessary. See Table 3B below.

Table 3B – Construction Activity/Infection Control Matrix.

CONSTRUCTION ACTIVITY →				
↓	TYPE “A”	TYPE “B”	TYPE “C”	TYPE “D”
RISK LEVEL				
Group 1	I	II	II	III/IV
Group 2	I	II	III	IV
Group 3	I	III	III/IV	IV
Group 4	III	III/IV	III/IV	IV

3.6.5.4 Required Infection Control Construction Procedures by Class. Detailed descriptions of required infection control measures to be performed for Class I, Class II, Class III and Class IV. See Table 3C below.

Table 1B – Infection Control Construction Procedures by Class.

Infection Control Construction Procedures by Class (Class I, Class II, Class III, Class IV)	
Class I	<ol style="list-style-type: none"> 1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace any ceiling tile displaced for visual inspection 3. Minor demolition for remodeling.
Class II	<ol style="list-style-type: none"> 1. Provides active means to prevent airborne dust from dispersing into atmosphere. 2. Water-mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Wipe surfaces with disinfectant. 6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA-filtered vacuum before leaving work area. 8. Place adhesive dust walk off mats at outside of entrance to and inside of exit from work area. 9. Remove or isolate HVAC system in areas where work is being performed.
Class III	<ol style="list-style-type: none"> 1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site using HEPA-filtered air filtration units. 5. Do not remove barriers from work area until complete project is thoroughly “terminal” cleaned by Environmental Services Department. 6. Vacuum work area with HEPA-filtered vacuums. 7. Wet mop with disinfectant. 8. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 9. Contain construction waste before transport in tightly covered containers. 10. Cover transport receptacles or carts. Tape covering. Clean cart wheels before transport/exiting construction area. 11. Remove or isolate HVAC system in areas where work is being performed.
Class IV	<ol style="list-style-type: none"> 1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site using HEPA-filtered air filtration units. 5. Seal holes, pipes, conduits, and punctures appropriately. 6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving the work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 7. All personnel entering the work site are required to wear shoe covers. Shoe covers must be changed each time workers exit the work area. 8. Do not remove barriers from work area until completed project is thoroughly “terminal” cleaned by the Environmental Services Department. 9. Vacuum work area with HEPA-filtered vacuums. 10. Wet mop with disinfectant. 11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 12. Contain construction waste in tightly covered containers before transporting. 13. Cover transport receptacles or carts. Tape covering. 14. Remove or isolate HVAC system in areas where work is being done.

3.6.6 PROCEDURES

3.6.6.1 ICRA Permits

- 3.6.6.1.1 To determine requirements of an ICRA permit for a construction area, refer to the approved Infection Control Plan. Perform an ICRA (review Table 1A/1B/1C, Table 2, Table 3).
- 3.6.1.1.2 An ICRA Construction Permit is required for all Infection Control Risk Groups. For construction activities determined by to be in Group 3 or 4, a meeting to review the construction activity with Infection Control shall be performed prior to submitting the ICRA Construction Permit documentation to Infection Control for approval.
- 3.6.1.1.3 Complete ICRA Construction Permit form and attach a description of additional procedures to be followed, including a plan of locations of containment barriers and indicate clearance in corridors as necessary. Submit with a project Method of Procedure document.
- 3.6.1.1.4 Obtain approved ICRA Construction Permit before beginning any demolition or construction Work.
- 3.6.1.1.5 ICRA Construction Permit to be displayed at entrance to work area during entire construction period.
- 3.6.1.1.6 Return original ICRA Construction Permit to Infection Control after completion of work. Make a color copy/PDF document for project records/documentation.
- 3.6.1.1.7 Attachment 10 – ICRA CONSTRUCTION PERMIT
- 3.6.1.1.7 Attachment 11 – INTERIM SAFETY INFECTION CONTROL DAILY MONITORING

3.6.6.2 Compliance and Monitoring

- 3.6.6.2.1 Facilities Plant and Engineering will conduct periodic checks on ICRA Construction Permit areas as necessary and will observe or measure the integrity of containment barriers or barricade walls, barrier alarms (as required), environmental controls, noise, traffic control, water supply and levels, air supply and levels, contractor personnel with proper personal protective equipment (PPE) and levels of dust in area and on construction personnel.

3.6.6.2.1.1 Infection Control may require specific personal protective equipment, including protective face shield, gloves and N-95 respirators to be utilized as appropriate for the task at hand.

3.6.6.2.1 Infection Control will also make periodic visits and review for compliance with ICRA Permit.

3.6.6.3 Cleaning

3.6.6.3.1 Contractor to use cleaning and disinfection products approved by Infection Control.

3.6.6.3.2 Contractor to perform final cleaning of construction, and additional cleaning as required by Punchlist and/or OSHPD inspections.

3.6.6.3.3 SMMC Environmental Services will be responsible for routine cleaning of adjacent areas and for the terminal cleaning and disinfection of the construction area or zone prior to the opening of the newly renovated or construction area to occupants

3.6.6.4 Completion

3.6.6.4.1 After completion of construction, ventilation will meet project specifications to OSHPD requirements.

3.6.6.4.2 Filters will be visually inspected for plugging or leakage.

3.6.6.4.3 Water supply lines will be flushed before placing newly completed construction are into service/operation. Infection Control Department and Facilities Plant & Engineering Department must be notified of flushing schedule/activity.

3.6.6.4.4 Certification that water supply lines have been disinfected in accordance to OSHPD regulations is required, and such certification shall be submitted to Infection Control and Facilities Plant & Engineering.

3.7 CONTRACTOR PRE-CONSTRUCTION

3.7.1 Prior to the start of construction, and in coordination with preparing Contractor's Medical Safety and Infection Control Program, and all other requirements of this section, Contractor shall perform a survey to evaluate the construction conditions pertaining to the scope of the Work.

3.7.2 DOCUMENTS/FORMS

3.7.2.1 Attachment 12 – CONTRACTOR PRE-CONSTRUCTION RISK ASSESSMENT SURVEY

3.8 PROJECT METHOD OF PROCEDURE

3.8.1 Any work to be performed outside of the Contractor’s work area, or outside of the normal work hours, or impacting the facilities operations, will require coordination with SMMC via the project’s Method of Procedure (MOP) process.

3.8.2 See Attachment 13 for the Project Method of Procedure Form.

3.8.3 The specific work procedure described on the MOP form shall be developed by the Contractor for each event as described in 3.8.1, and shall be submitted to the Owner’s Representative (Construction Manager) for review and to obtain acceptance and signatures by SMMC.

3.8.4 The Department of Public Works Capital Projects and SMMC Facilities Plant & Engineering reserves the right to require revisions to the MOP form, and the information contained therein, from time to time as appropriate to meet the needs of the project and or facility operational procedures.

3.8.5 MOPs must be submitted by the contractor to the County Representative at least 72 hours prior to proposed start of work.

3.8.6 Work on the activities described in the MOP shall not commence without prior signatory approval by the Owner, and by which SMMC Facilities Plant and Engineering has secured the project work site in the Facility at 72 hours prior to the proposed start of work.

3.8.7 Appropriate Contractor personnel shall maintain a presence during implementation of the work described in the MOP, whether the work to be implemented is by Contractor’s own forces or by those of its Subcontractor personnel. Contractor personnel shall accompany workers and remain present from the beginning of the work until its completion.

3.8.8 DOCUMENTS/FORMS

3.8.8.1 Attachment 13 - PROJECT METHOD OF PROCEDURE (MOP) FORM

PART 4 – DOCUMENTS AND FORMS

Attachment 1 – INTERIM LIFE SAFETY MEASURES (ILSM) MATRIX FOR EXISTING SIGNIFICANT LSC DEFICIENCIES OR CONDITIONS

Attachment 2 – INTERIM LIFE SAFETY MEASURES (ILSM) MATRIX KEY

Attachment 3 – INTERIM LIFE SAFETY MEASURES EVALUATION CRITERIA

- Attachment 4 – INTERIM LIFE SAFETY DAILY MONITORING
- Attachment 5 – CONTRACTOR CHECKLIST FOR RELATED INTERIM LIFE SAFETY MEASURES AT THE SMMC FACILITY
- Attachment 6 – UTILITY SYSTEM SHUT DOWN NOTICE
- Attachment 7 – ABOVE-CEILING WORK PERMIT
- Attachment 8 – HOT WORK PERMIT
- Attachment 9 – FIRE WATCH LOG
- Attachment 10 – ICRA CONSTRUCTION PERMIT
- Attachment 11 – INTERM SAFETY INFECTION CONTROL DAILY MONITORING
- Attachment 12 – CONTRACTOR PRE-CONSTRUCTION RISK ASSESSMENT SURVEY
- Attachment 13 – PROJECT METHOD OF PROCEDURE (MOP) FORM

Attachment 1
INTERIM LIFE SAFETY MEASURES (ILSM) MATRIX
FOR EXISTING SIGNIFICANT LSC DEFICIENCIES OR CONDITIONS

Life Safety Code (LSC) deficiencies or conditions can result from planned or unplanned maintenance/testing, renovations, and/or construction. Below are several such issues, not to be considered and all-inclusive list.

Existing Significant Life Safety Code (LSC) Deficiencies or Conditions:	ILSM #1	ILSM #2	ILSM #3	ILSM #4	ILSM #5	ILSM #6	ILSM #7	ILSM #8	ILSM #9	ILSM #10	ILSM #11	ILSM #12	ILSM #13	ILSM #14
Impaired fire or smoke compartments (non-latching doors, unprotected barrier penetrations, etc.)												X		
Fire alarm system impaired (or out of service) > 4 hours													X	X
Sprinkler system impaired (or out of service) > 10 hours													X	X
Hazardous use areas not properly separated from corridors									X					
Accumulation of									X		X			

combustibles and/or materials														
Obstructed fire exit or fire exit discharge (to include stairs)	X	X											X	
Excessive travel distance to an approved exit (or lack of two remote exits)	X								X					
Temporary relocation of exits to accommodate work	X	X	X			X							X	
Major renovation of an occupied floor	X	X				X						X		
Activity involving ignition sources such as welding and/or torching							X	X	X					
Exterior construction work including adding an addition to an existing structure	X		X						X					

END OF DOCUMENT

Attachment 2
INTERIM LIFE SAFETY MEASURES (ILSM) MATRIX KEY

ILSM # 1	Ensuring Egress	Provide and maintain alternative egress routes and exits, install temporary EXIT signage and provide 'alternate exit' training.
ILSM # 2	Maintaining escape routes in construction areas	Ensure escape routes are unobstructed at all times. Inspect on a daily basis.
ILSM # 3	Emergency forces access	Ensure exterior building access points are unobstructed, maintain primary and/or alternate vehicular access and notify emergency response agencies when alternative access points are required.
ILSM # 4	Ensuring operational life safety systems	Provide a temporary but equivalent fire alarm system when any fire system is impaired. Inspect and test temporary systems monthly.
ILSM # 5	Temporary systems inspected and tested monthly.	Document inspections and retain records on file.
ILSM # 6	Temporary construction partitions	Temporary barriers must be smoke tight or made of non-combustible or limited combustible materials that will not contribute to the development or spread of fire.
ILSM # 7	Additional fire fighting equipment	Ensure additional firefighting equipment is available. Contractor is responsible in construction areas.
ILSM # 8	Additional fire equipment training	Provide additional fire equipment training.
ILSM # 9	Controlling combustible loading	Monitor debris removal to maintain the lowest possible fire loading.
ILSM # 10	Conducting 2 fire drills per shift	Conduct 1 additional fire drills per shift per

	in all areas	quarter.
ILSM # 11	Conducting 2 fire drills per shift in local area	Conduct 1 additional fire drills per shift per quarter
ILSM # 12	Increased hazard surveillance	Increase hazard surveillance of buildings, grounds and equipment including excavations, construction areas, staging areas, storage areas, field offices, etc.
ILSM # 13	Conducting organizational training on life safety	Conduct safety education programs to promote awareness of construction hazards, building deficiencies and temporary measures.
ILSM # 14	Implement Fire Watch and notify emergency forces	Conduct hourly fire watch per Fire Watch Protocol. Notify the fire department (directly or via PBX > off-site monitoring company). Required when fire alarm is out of service more than 4 hours in a 24-hour period in an occupied building and/or a sprinkler system is impaired for more than 10 hours in a 24-hour period.

END OF DOCUMENT

**Attachment 3
 INTERIM LIFE SAFETY MEASURES EVALUATION CRITERIA**

Date of Survey:
Scope of Work:
Project Location:
Project Name:
Project Manager:
Facility Manager's Signature:

	QUESTIONS	YES	NO	N/A
1.	Will existing exit egress routes from occupied areas remain unchanged/impaired/blocked?			
2.	Will exit stairs remain unobstructed and fire separated?			
3.	Will existing corridor width be reduced?			
4.	Will the construction site require tailored traversing of egress to provide emergency exiting?			
5.	Will the construction area require additional exit routes?			
6.	Will fire and smoke compartments remain intact and unchanged?			
7.	Will fire alarm system remain functional and unchanged?			
8.	Will fire suppression systems remain functional and unimpaired?			

9.	Will a hot work permit be necessary for heat-producing activities that could be sources of ignition?			
10.	Will construction area be separated by noncombustible smoke tight partitions?			
11.	Will there be an increase in debris, trash, and/or combustible fire load?			
12.	Will additional fire-fighting equipment be available in the construction area?			
13.	Will construction workers be trained in the Facilities fire plan?			
14.	Will construction workers be trained in the use of fire extinguishers?			
15.	Will access to the Emergency Department be unobstructed?			
16.	Will emergency access for the local fire department remain unobstructed?			
17.	Will special training to compensate for structural, compartment, or code deficiencies be needed?			
18.	Other			
Is an Interim Life Safety Measures Plan required?				

END OF DOCUMENT

**Attachment 4
 INTERIM LIFE SAFETY DAILY MONITORING**

Date of Survey	
Inspector*	
Area Surveyed	
Project Number	
Project Name	
*The inspector shall be determined prior to or at the onset of the project. The designated individual may vary based on the work being done, scope, and complexity of the project and may also vary throughout the project.	

YES NO N/A

A. EXITS				
1.	Do exits provide free and unobstructed egress?			
2.	Did personnel receive training for alternative exits?			
3.	Are means of egress in construction area inspected daily?			
4.	Is there free and unobstructed access to Emergency Department/Services and for emergency forces?			
B. FIRE EQUIPMENT				
1.	Are fire alarms, detection, and suppression systems in an operational function?			
2.	Are fire alarms, detection, and suppression systems impaired?			
3.	Have training and additional fire equipment been provided for personnel?			
C. FIRE SYSTEM				
1.	Power properly secured at the end of each workday?			
2.	Is there evidence of smoking?			
3.	Are construction areas free of storage and housekeeping materials, food, food waste, and debris for daily operations to reduce flammable and combustible fire load of the building?			

D. GENERAL SAFETY			
1.. Are hand and safety rails in place and in good condition?			
2.. Are extension cords grounded and in good condition?			
3. Are power tools in good condition?			
4. Are hard hats used regularly?			
5. Are cutting and welding operations properly conducted?			
6. Are all construction activities conducted in a safe manner?			
7. Does all scaffolding comply with OSHA requirements (1926.421)?			
8. Are employees trained in fall hazards in work areas near roof edge?			

Comments: _____

Owner’s Representative/Construction Manager: _____ Date _____

Contractor _____ Date _____

Owner/Project Manager _____ Date _____

Sent to Safety Officer: _____ Date _____

END OF DOCUMENT

Attachment 5
CONTRACTOR CHECKLIST FOR RELATED INTERIM LIFE SAFETY MEASURES
AT THE SAN MATEO MEDICAL CENTER (SMMC) FACILITY

1. Introduction to Facilities Plant & Engineering Procedures & Contact Numbers
2. Exits/Evacuation Procedure
3. Emergency Codes
4. Fire Alarm Procedure
5. Location of Fire Extinguishers
7. Emergency Phone Number
8. SMMC Smoking Policy

END OF DOCUMENT

Attachment 6
DEPARTMENT OF PUBLIC WORKS
SAN MATEO MEDICAL CENTER FACILITIES PLANT & ENGINEERING DEPARTMENT
PHONE: (650) 573 2529 FAX: (650) 573 2027

UTILITY SYSTEM SHUTDOWN NOTICE
MUST BE SUBMITTED AT LEAST 3 WORKING DAYS (72 HOURS) PRIOR TO SHUTDOWN

System:
Location/Building:
Reason for Shutdown:
Date & Time of Work To Be Performed:
Areas Affected:
System Shutdown Sequence:
Name & Contact Info of Person Requesting:
Name & Contact Info of Responsible Person/Contractor:

Name of Engineering Staff Assigned:
Shutdown Approved By:
Chief of Plant & Engineering:
Supervising Stationary Engineer:
Notifications Made to the Departments:
Email(s):
Shutdown Notice Posted:

Note: Fire Alarm System Shutdown should be coordinated with PBX and Cal-Security. Keller Center to be notified before any strobes and chimes are tested.

END OF DOCUMENT

**Attachment 7
SAN MATEO MEDICAL CENTER
ABOVE-CEILING WORK PERMIT**

Name _____ **Date** _____

Department/Company _____

Phone _____ **Fax** _____

Location _____ **Room Number** _____

Description of Work: _____

Wiring to be installed or modified:

Communication _____	Door Control _____
Fiber Optic _____	Fire Alarm _____
Security _____	Telephone _____
Other _____	Electric low or high Voltage _____
HVAC _____	Television _____

How work will be supported:

Deck _____	Existing Casework _____
Existing piping or conduit rack _____	New pipe or conduit rack _____
Existing Cable Tray _____	New cable tray _____

Wall _____

Other _____

Will any penetration modifications be made to the visible ceiling or walls:

Yes _____

No _____

Describe: _____

Start Date _____ **Time** _____ **Completion Date** _____ **Time** _____

Authorized to Proceed _____ **Date** _____

Interim Inspection _____ **Date** _____

Final Inspection _____ **Date** _____

END OF DOCUMENT

**Attachment 8
HOT WORK PERMIT**

(SEE ATTACHED EXAMPLE SMMC HOT WORK PERMIT)

END OF DOCUMENT

Attachment 10

INFECTION CONTROL RISK ASSESSMENT (ICRA) CONSTRUCTION PERMIT					
Project No.			Permit No:		
Location of Construction:			Project Start Date:		
Project Coordinator			Estimated Duration:		
Contractor Performing Work			Permit Expiration Date:		
Supervisor:			Telephone:		
YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		TYPE A: Inspection, non-invasive activity			GROUP 1: Least Risk
		TYPE B: Small scale, short duration, moderate to high levels			GROUP 2: Medium Risk
		TYPE C: Activity generates moderate to high levels of dust, requires greater than 1 work shift for completion			GROUP 3: Medium/High Risk
		TYPE D: Major duration and construction activities Requiring consecutive work shifts			GROUP 4: Highest Risk
CLASS I		1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace any ceiling tile displaced for visual inspection.	3. Minor Demolition for Remodeling.		
CLASS II		1. Provides active means to prevent air-borne dust from dispersing into atmosphere 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Wipe surfaces with disinfectant.	6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place adhesive dust walk-off mats at outside entrance and inside exit from work area. 9. Remove or isolate HVAC system in areas where work is being performed.		

County of San Mateo – Department of Public Works
 San Mateo Medical Center (SMMC)
 SMMC Prevent Self Harm & Ligature Project No. P30F1
 OSHPD No. S191567-41-00

CLASS III	1. Obtain infection control permit before construction begins.	6. Vacuum work with HEPA filtered vacuums.
	2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system.	7. Wet mop with disinfectant.
Date	3. Complete all critical barriers or implement control cube method before construction begins.	8. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.
Initial	4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.	9. Contain construction waste before transport in tightly covered containers.
	5. Do not remove barriers from work area until complete project is thoroughly cleaned by the Contractor. (Prior to occupancy area shall be "terminal" cleaned by Environmental Services).	10. Cover transport receptacles or carts. Tape covering.
		11. Remove or isolate HVAC system in areas where work is being performed.
Class IV	1. Obtain infection control permit before construction begins.	7. Do not remove barriers from work area until completed project is thoroughly cleaned by the Contractor. (Prior to occupancy area shall be "terminal" cleaned by the Environmental Services).
	2. Isolate HVAC system in area where work is being done to prevent contamination of duct system.	8. Vacuum work area with HEPA filtered vacuums.
Date	3. Complete all critical barriers or implement control cube method before construction begins.	9. Wet mop with disinfectant.
Initial	4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.	10. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.
	5. Seal holes, pipes, conduits, and punctures appropriately.	11. Contain construction waste before transport in tightly covered containers.
	6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.	12. Cover transport receptacles or carts. Tape covering.
	7. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time workers exit the construction area.	13. Remove or isolate HVAC system in areas where work is being performed.
Additional Requirements:		
_____	_____	_____
Date	Initials	12 Hour uninterrupted exchange required
Permit Request By:		Permit Authorized By:
Date:	Date:	
Re-Occupancy Approval Date /Signature/Title:		

END OF DOCUMENT

Attachment 11
INTERIM SAFETY INFECTION CONTROL DAILY MONITORING

	YES	NO	N/A
1. No construction activity takes place within 25 feet of existing fresh air intakes?			
2. Materials used (i.e., fire retardants) comply with necessary safety regulations.			
3. Monitoring of impervious construction barriers to verify negative pressure.			
4. Demonstrated compliance with traffic patterns.			
5. Demonstrated compliance with appropriate use of cover garbs when outside construction area.			
6. Demonstrated use of appropriate equipment to prevent airborne particulate matter/debris; this includes HEPA filtration units, HEPA vacuum equipment, and continuous use of exhaust fans.			
7. Ducts remain sealed/capped.			
8. Doors are closed and gaskets/hardware are intact.			
9. Methods of debris transport are monitored and found to be consistent with processed designed to minimize airborne particulate matter/debris.			
10. All windows and doors remain closed to prevent circulation of dust/debris.			
11. Carpet or adhesive strips, (e.g. sticky mats) are clean and available at doorways for shoe dust collection.			
12. Areas are found to be cleaned at the end of each day.			
13. No signs of water leakage.			
11. No signs of pests.			

Additional Comments

Owner’s Representative/Construction Manager _____ Date _____

Owner/ Project Manager _____ Date _____

Sent to Infection Control _____ Date _____

END OF DOCUMENT

Attachment 12
CONTRACTOR PRE-CONSTRUCTION RISK ASSESSMENT SURVEY
 Contractor to survey with Owner and/or Owner’s Representative

Date of Survey: _____

Scope of Work: _____

Area Surveyed: _____

Project Name: _____

Surveyors: _____

	QUESTIONS	YES	NO	N/A
1.	Will construction affect exit routes around construction site?			
2.	Are any of the following environmental hazards present?			
	A. Asbestos			
	B. Hazardous Materials (Chemicals, Radiation, Biohazards, etc.)			
	C. Confined Spaces			
	D. Other			
3.	Will any of the following systems be affected?			
	A. Fire Alarm			
	B. Sprinkler			
	C. Electrical			
	D. Water			
	E. Medical Gases			
	F. HVAC			
	G. Dust Control Measures			
	H. Wall/ceiling cutting& patching			
4.	Do exits provide free and unobstructed egress?			
5.	Will personnel receive additional training? If yes, When:-----			
6.	Is there unobstructed access to fire extinguisher’s/fire alarms/phones?			
7.	Have all contractors been instructed on the “No Smoking Policy”?			

8.	Do additional fire drills need to be conducted? If no, see below			
9.	Are temporary partitions smoke tight/noncombustible/appropriately rated?			
10.	Are construction personnel trained and fire equipment available?			
11.	Will construction generate noise that exceeds the usual ambient noise levels?			
12.	Will construction and equipment installation generate any vibrations that affect patient sensitive areas/equipment?			

END OF DOCUMENT

Attachment 13 PROJECT METHOD OF PROCEDURE (MOP) FORM

MOP Title: _____

Date of Request: _____ Project Number: _____

Contractor: _____ Subcontractor: _____

Date of Work: _____ to _____

Start Time: _____ End Time: _____ **Critical Path Schedule Item:** No ____ Yes ____

Start Date per Schedule: _____ Duration _____

Completion of prior MOP's required before proceeding: No ____ Yes ____
 If Yes, which MOP/MOP's _____ MOP scheduled completion: _____

Facility Support Required: No ____ Yes ____

If Yes, staff size/expertise _____ Duration _____

Fall Protection Measures Req.: No ____ Yes ____

If Yes, type: OH ladder work, lift equipment, scaffolding, other: _____

Dust Protection/Filter Protection: No ____ Yes ____ Security Required: No ____ Yes ____

Flagperson Required: No ____ Yes ____

Utility Shut Down Required: No ____ Yes ____
 If Yes, Facility Systems Affected _____ Length of shut down _____

Utility/Systems contingency/backup plan: If required attach written plan and sequence of operations.

Fire Watch Req.: No ____ Yes ____

Proper Advance Notice Provided. (72 hours minimum required): No ____ Yes ____

If No Explain special circumstances _____.

Logistics plan for protection barriers/security/safety measures/ access attached:

County of San Mateo – Department of Public Works
 San Mateo Medical Center (SMMC)
 SMMC Prevent Self Harm & Ligature Project No. P30F1
 OSHPD No. S191567-41-00

Access area blocked or inaccessible _____ duration _____

Risk Level to Operating Facility: Low ____ Medium ____ High ____

Deliveries Req.: No ____ Yes ____

If yes, size of truck _____ Frequency of deliveries _____

Contract Work: No ____ Yes ____

C.O. Work: No ____ Yes ____ If Yes, C.O. # _____

PROJECT METHOD OF PROCEDURE (MOP) FORM, CONT.

Description of Work: Detail work durations for specific steps/scope of work.		
Attach corresponding SMMC forms for the Work :		
<i>CM/PM will contact the duty engineer prior to the start of work and after completion of work.</i>		
Project Observation (Name/Number):		
Area Affected:		
Inspections		
Overtime inspection costs associated with the scope of work outlined above shall be borne by:		
County/DPW ____	Contractor ____	No Overtime Inspection Required ____
Safety Measures		

County of San Mateo – Department of Public Works
 San Mateo Medical Center (SMMC)
 SMMC Prevent Self Harm & Ligature Project No. P30F1
 OSHPD No. S191567-41-00

Hot Work Permit Required: Yes _____ Not Required _____		
Special Safety Required: Yes _____ Not Required _____ If YES Explain: _____		
Submitted By:		
Contractor Manager/Superintendent:	Date:	Cell Phone #
Recommended By:		Approved By:
IOR:	Date:	Cell Phone #
Construction Manager:	Date:	Cell Phone #
Approved By:		
Facility Plant & Engineering:	Date:	Cell Phone #
Facility Safety:	Date:	Cell Phone #
Facility Security:	Date:	Cell Phone #
County of San Mateo, DPW Capital Projects:	Date:	Cell Phone #
*By signing above, signatory warrants and represents that he/she executed this MOP in his/her authorized capacity and that by his/her signature on this MOP, he/she or the entity upon behalf of which he/she acted, executed this MOP.		

END OF DOCUMENT

END OF SECTION 01 35 13.19

SECTION 01 45 00

QUALITY CONTROL

PART 1 GENERAL

1.1 GENERAL

- A. Definitions.
 - 1. The term "Required Inspections" means a testing program as required by OSHPD and/or by the City and County of San Mateo. Contractor shall be responsible for coordination, access, and providing required tests, samples, etc. for all tests, inspections, etc., as required.
- B. Tests, inspections, and acceptances of portions of the Work required by the Contract Documents or by Applicable Code Requirements shall be made at the appropriate times. Except as otherwise provided, Contractor shall make arrangements and coordinate with the IOR for such tests, inspections, and acceptances with the Testing Laboratory. Contractor shall give Owner's Representative and IOR timely notice of when and where tests and inspections are to be made.
- C. If such procedures for testing, inspection, or acceptance reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for Owner's Representative's and/or IOR services and expenses.
- D. If Owner's Representative and/or IOR is to observe tests, inspections, or make acceptances required by the Contract Documents, Owner's Representative and/or IOR will do so promptly and, where practicable, at the normal place of testing.
- E. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

1.2 TESTS AND INSPECTIONS

- A. Certain portions of the Work will be tested and/or inspected at various stages. Nothing in any prior acceptance or satisfactory test result shall govern, if at any subsequent time the Work or portion thereof, is found not to conform to the requirements of the Contract Documents.

1.3 TEST REPORTS

- A. Contractor's Testing Laboratory shall submit 1 copy of all reports to Owner's Representative and Owner's Inspector of Record, indicating observations and results of tests and indicating compliance or non-compliance with the Contract Documents.
- B. Owner's Representative and/or IOR will distribute 1 copy each of the reports to Owner Facilities, Owner's Consultants, and Contractor.

County of San Mateo – Department of Public Works
San Mateo Medical Center (SMMC)
SMMC Prevent Self Harm & Ligature Project No. P30F1
OSHPD No. S191567-41-00

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION 01 45 00

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL

- A. All material and equipment incorporated in the Work shall be:
 - 1. New.
 - 2. In condition acceptable to Owner's Representative.
 - 3. Suitable for intended use.
 - 4. Keep materials clean, dry, and undamaged.

1.02 TRANSPORTATION AND HANDLING

- A. Deliver manufactured products in their original unbroken containers or bundles, clearly labeled with manufacturer's name, brand, and grade seal or model number.
- B. Promptly remove damaged or defective products from the site and replace at no increase in Contract Sum.
- C. Handle materials and equipment in a manner to avoid damage to products and their finishes.
- D. Promptly remove damaged or defective products from the Project site and replace with no adjustment of Contract Sum.

1.03 STORAGE AND PROTECTION

- A. Store manufactured products in accordance with manufacturers' instructions and with seals and labels intact and legible.
- B. Store products subject to damage by the elements in weather tight enclosures.
- C. Maintain temperature and humidity in accordance with manufacturers' recommendations.
- D. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
- F. Arrange storage to allow adequate inspection.
- G. Periodically inspect stored products to assure that products are maintained under specified conditions and are free from damage and deterioration.
- H. Protection After Installation:
 - 1. Prevent damage to materials and equipment.
 - 2. Use whatever protective materials or methods are necessary to prevent damage to installed products from traffic, construction operations, and weather. Remove protection when no longer required.
 - 3. Maintain temperature and humidity conditions in interior spaces for the Work in accordance with manufacturers' instructions for the materials and equipment being protected.
- I. No storage of equipment, materials, and toolboxes outside the construction area will be permitted.
- J. Contractor shall figure staging materials or equipment through an outside warehouse or yard, if at all possible. There is little or no space at the construction site for storage. Contact the Owner's Representative for possible staging areas.
- K. Materials, equipment or toolboxes must not be stored in building lobby or access areas to project

site. No storage will be allowed in existing parking areas. The Owner will remove items not authorized after suitable warning.

- L. Store paints or any other combustible materials in the properly rated storage lockers.
- M. Storage: Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials to Project Area.
- N. Use protective methods as required to prevent damage to products from traffic, construction operations, weather, and other causes. Remove protection when no longer required.
- O. Maintain temperature and humidity in accordance with manufacturers' written instructions.
- P. Protect the various materials, work, equipment and finishes provided by the several trades from other operations or work in an appropriate manner to ensure they are in satisfactory condition at the Date of Substantial Completion. Final responsibility for protection rests with the Contractor.

1.04 TESTING LABORATORY LABEL

- A. Materials and equipment, for which testing laboratories standards have been established and their label service is available, shall bear the appropriate label.

1.05 MANUFACTURERS' TRADE MARKS AND NAMES

- A. Owner's Representative reserves the right to review and request the removal or redesign of manufacturers' trade marks and names on items of materials and equipment which will be exposed to view in the completed Work. Such removal or redesign shall be with no adjustment of Contract Sum.

1.06 MATERIALS AND EQUIPMENT

- A. General: Provide products which comply with specified requirements and which are undamaged and unused at time of installation, and which are complete with accessories, trim, finish, safety provisions and other devices and details needed for a complete installation and for intended use and effect.
- B. Standard Products: Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar applications.
- C. Nameplates: Except as otherwise noted for required approval, ensure labels and operating data do not permanently attach or imprint manufacturer's, or producer's, nameplates or trademarks on surfaces of products which will be exposed to view, either in occupied spaces or on exterior of Work.

1.07 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in applications indicated. Accurately locate and secure each product.

PART 2 PRODUCTS – Not Used

PART 3 Execution – Not Used

END OF SECTION 01 60 00

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Demolition, cutting into work to provide for access, inspection, and performance of other work, and subsequent fitting and patching required to restore surfaces and assemblies to their original condition. Cutting and patching of Work during manufacture of products, and initial fabrication, is not work of this Section.

1.2 SYSTEM DESCRIPTION

- A. Performance Requirements: Do not reduce performance capacities, nor alter the physical and aesthetic characteristics of the Work as determined by the Owner's Representative, due to performance of cutting and patching.

1.3 DEFINITIONS

- A. Demolition: Includes disconnecting and removing from the premises items shown on plans to be removed, or items which are not required in the finished installation.
- B. Cutting: Includes cutting into existing construction to permit completion of contract work.
- C. Patching: Includes restoration of surfaces disturbed by demolition, cutting, or other contract operations.

1.4 QUALITY ASSURANCE

- A. Employ skilled workers having minimum three years' experience with assemblies and materials similar to cutting and patching work required for this Project.
- B. Before cutting and patching the following categories of work, obtain the Owner's Representative's approval to proceed as required in the procedural proposal for cutting and patching.
 - 1. Primary Structural components: Girders, beams, joists, columns, piers, bearing walls, concrete slabs, etc.
 - 2. Secondary Structural Components: Lintels, equipment supports, decking, stair systems, etc.
 - 3. Weatherproof Enclosures: Roofing, flashing, curtain walls, storefront systems, exterior doors and windows.
 - 4. Mechanical, electrical, communications and conveying systems.
 - 5. Primary operational systems and equipment.
 - 6. Noise and vibration control elements and systems.
- C. Requirements for Structural Work: Do not cut and patch structural work in a manner that

would result in a reduction of load-carrying capacity or load-deflections ratio.

- E. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life of decreased safety.
- F. Visual Requirements: Do not cut and patch work exposed on the building's exterior or in occupied spaces, in a manner that would, in the Owner's Representative's opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Owner's Representative to be cut and patched in a visually unsatisfactory manner.
- G. Field Measurements: Verify measurements prior to commencing Work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Carefully remove, store, and protect materials designated to be re-used in contract work.
- B. Materials designated for demolition shall become Contractor's property and removed from the Site legally.
- C. Materials designated to be salvaged for Owner shall be removed with care, protected, and stored in a location specified by the Owner.

1.7 SEQUENCING AND SCHEDULING

- A. Except as otherwise indicated or as approved by the Owner's Representative, proceed with cutting and patching at the earliest feasible time and complete work without delay.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Unless otherwise indicated or directed provide Work identical to adjacent and similar assemblies as determined by the Owner's Representative. When identical materials are not available, or cannot be used, use materials matching existing adjacent and similar surfaces to the fullest extent possible with regard to visual effect and physical characteristics.
- B. General: Use materials for patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for patching that will result in equal-or-better performance characteristics.
- C. Grout for patching holes in existing concrete surfaces: Nonshrink type, factory pre-mixed grout, "Vibrofoil" of A.C. Horn, "Ferrolith" of SonnebornContech, or equal.
- D. Existing Ceilings: Remove carefully to minimize dust and debris. Acoustical tile for patching shall match existing adjacent tiles. Conform to requirements as shown on the

drawings.

- E. Patching of Holes in Fire-Rated Surfaces: Comply with requirements as shown on the drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Examine materials, assemblies and conditions under which the work is to be performed, correct unsafe and unsatisfactory conditions before proceeding with the work; stop Work when conditions occur which might jeopardize the integrity or appearance of materials to remain.
- B. Before beginning demolition work, examine site and verify the following:
 - 1. Existing utility lines to be removed have been disconnected.
 - 2. Utility lines serving occupied portions of building will remain in operation during demolition.
- C. Before Cutting Operations: Examine surfaces to be cut and patched and conditions under which work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

3.2 PREPARATION

- A. Protections: Prevent damage to Work during cutting and patching. Protect from weather Work exposed to the exterior by cutting and patching operations. Provide temporary shoring and bracing to maintain existing position and prevent movement of Work.
- B. Do not cut existing mechanical systems and utilities until provisions to maintain service are in place.
- C. Where possible, review proposed procedures with the original installer and comply with original installer's recommendations.
- D. Temporary Support: To prevent structural failures, provide temporary support of work to be cut.
- E. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- F. Take precautions not to cut existing pipe, conduit, or ducts serving the building but scheduled to be relocated until provisions have been made to bypass them.
- G. Rooms adjacent to contract work will be occupied during the construction period. Maintain a tight barrier at openings into those rooms and remove debris in covered containers.

3.3 CUTTING

- A. Cutting: Use methods least likely to damage work to be retained and adjoining work. Make penetrations neatly, to sizes required, minimize disturbance of Work to remain. Use tools

designed for sawing or grinding, not hammering and chopping. Cut and drill exposed surfaces from finished side into concealed surfaces.

- B. Comply with requirements of applicable sections of Division 16 for cutting and patching of electrical work.
- C. Unless otherwise required, cap, valve, and seal remaining portion of cut and abandoned utility services, prevent entrance of moisture and foreign matter.
- D. Ensure by-pass of utility services, such as pipe and conduit, has been completed before cutting, where such utility services are shown or required to be removed, relocated, or abandoned.

3.4 PATCHING

- A. Seams: Durable without change of texture, plane, and profile in finished Work. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.
- B. Floor and Wall Surfaces: Patch and repair provide even surface of uniform color and appearance. Where necessary to achieve uniform color and appearance, remove existing finish and coverings and replace with new materials.
 - 1. Where patch occurs in a smooth finished surface, extend final finish over entire unbroken surface containing patch to nearest natural break.
- C. Ceilings: Patch gypsum board and re-adhere acoustical ceiling tiles to match existing conditions. Provide an even plane surface of uniform appearance.
- D. Tolerances: In addition to performance requirements of this Section, comply with tolerances specified in individual technical Sections for repair of specific assemblies and materials.
- E. Plaster Installation:
 - 1. Unless otherwise indicated, provide 3-coat work in accordance with the California Lathing and Plastering Contractors Association, Inc. (CLPC) recommendations.
 - 2. Finish gypsum plaster with smooth-troweled surface. Sand lightly to remove trowel marks and arises.
 - 3. Cut, patch, point-up, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections.
- F. Hangers and Supports:
 - 1. Provide new hangers and supports for existing piping, conduit, or ductwork to remain after removal of existing partitions or ceilings. Conform to support details specified or shown for new work.
- G. Holes in Existing Concrete Floor Slabs, with a diameter not over the depth of the slab: Ream to a conical shape not less than 0.25:1 with the smallest diameter at the bottom of the slab. Roughen surfaces and clean away dust and loose particles. Fill with grout specified in this Section for patching holes in existing concrete surfaces. For patching larger openings, notify the Owner's Project Manager for this project.

3.5 REPAIRING

- A. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.
- B. Upon completion of inspection, testing, sample-taking, and similar services performed on the work, repair damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes.
- C. Repair finishes matching existing conditions. Where necessary, extend finish restoration to adjoining work in a manner, which will eliminate evidence of patching and refinishing.
- D. Restore damaged ceilings to match existing conditions.
- E. Restore utilities to their original condition.

3.6 LEVELING EXISTING CONCRETE FLOOR SLABS

- A. Patch depressions and level existing concrete floor slab to a surface plane tolerance of maximum 1/8-inch in 10-feet. Test with a 10-foot long straight edge.
- B. Apply underlayment over entire work area in strict accordance with manufacturer's written instructions, before any partition framing is placed.
- C. Keep traffic off the floor during curing period in accordance with manufacturer's printed recommendations, but in any case not less than 4-days.

3.7 ELECTRICAL DEMOLITION

- A. Do not shut down electrical service without approval of Owner.
- B. Do not begin demolition until all conduits have been traced by Contractor and services have been disconnected, as specified in Division 26.
- C. Provide additional wiring and work as required to maintain service to adjacent spaces during demolition, as specified in Division 26.
- D. Remove electrical service in demolition area including items in existing walls and ceilings to remain.
- E. Demolition of electrical Services:
 - 1. Remove device and wiring to panel without disturbing existing service to remain.
 - 2. Remove empty conduit back to boundary of Project area.
- F. Relocate or re-hang existing conduit when existing supports have been demolished or where there is interference with new light fixtures, in accordance with specifications in Division 16.
- G. Electrical demolition work shall be performed by certified journeyman electrician.

3.8 CLEANING

- A. Standard for cleaning Work: comply with requirements of Section 01 74 00 Cleaning and Waste Management throughout the project.

END OF SECTION 01 73 29

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.1 GENERAL

- A. Contractor shall confine its operations to areas permitted by the Contract Documents and keep the Project site clean and free from unreasonable accumulation of excess dirt, materials, or waste caused by Contractor.
- B. Contractor is responsible for meeting all San Mateo Medical Center requirements for Clean-up and Disposal as well as City of San Mateo Requirements for recycling of construction waste. A Waste Management plan is necessary to reuse or recycle all inert solids and at least 65% of all construction and demolition debris generated by the project.

The ordinance requires that mixed C&D waste materials must be transported off-site by a Registered Transporter and taken to a Registered Facility that can process and divert from dumping landfill a minimum of 65% of the material generated from construction, demolition or remodeling projects.

- C. Contractor is responsible for cleaning all affected areas prior to construction closeout. Cleaning shall be at the quality of a professional cleaning service.

1.2 DUST CONTROL

- A. Contractor shall maintain dust control at project site at all times.
- B. Where use of polyethylene is permitted, it shall be fire retardant type, approved by CSFM.
- C. Construction dust shall not be allowed in building lobby.

1.3 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for mop clean. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - 2. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - 3. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - 4. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of

stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

5. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 6. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 7. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 8. Remove labels that are not permanent.
 9. Wipe surfaces of mechanical and electrical equipment elevator equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 10. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 11. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 12. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 13. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19 "Construction Waste Management and Disposal."

1.4 CONSTRUCTION CLEANLINESS ENFORCEMENT

- A. Failure to follow the Contract Documents may result in shutdown of the project and/or warnings and fines. The first offense will result in a warning from the Owner's Representative. Second and subsequent infractions will result in a fine of not less than \$1,000 and up to \$5,000. Additionally the offending contractor's status as a responsible contractor for bidding future work may be affected.
- B. If a dispute arises regarding the Contractor as to the responsibility under the respective contract for maintaining the Project site and surrounding areas free from waste materials and rubbish, Owner may clean the site and deduct the cost from the contract amount at the then prevailing recharge rates in use at the Owner.

1.5 RECYCLING

- A. The City of San Mateo has stringent Construction and Demolition Waste Recycling requirements. All mixed construction and demolition waste material must be taken to a registered facility that will recycle it. Except as provided below, only registered Transporters can remove construction waste material from a construction site. Anyone who removes construction waste materials from a construction site, and is not exempt, must apply to be a Registered Transporter.

Where conflicts between Owner requirements and the City of San Mateo Requirements for Construction and waste recycling arise, the City of San Mateo requirements will take precedence.

- B. The Owner is committed to reducing the amount of materials sent to landfills. To that end, contractors at Owner projects are encouraged to use waste hauling companies that separate recyclable materials. The following firms have been identified as having refuse separation facilities, Owner substituted facilities may also be used:
 - 1. Golden Gate Disposal and Recycling Company; Contact: Pete Ratto (415) 575-2410
 - 2. Recology San Francisco; Contact: Mike Howe (415) 330-8401
 - 3. Waste Resource Technologies; Contact: Kathleen Gonzalez (415) 882-2175 ext. 15

1.6 GENERAL CLEANING

- A. During handling and installation of work at the project site, clean and work in progress and adjoining work on the basis of continuous maintenance.
- B. Clean and perform maintenance on installed work as frequently as necessary through remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Standard for cleaning Work: Comply with requirements of Section 01710 throughout the project and Section 01700 for final cleaning requirement in conjunction with cutting and patching activities.
- D. Clean areas and spaces where work is performed and used for access to work. Remove paint, mortar, oils, putty and items of similar nature. Clean ducts, pipes, conduit and similar features before finishes are applied. Restore damaged pipe covering to its original condition.
 - 1. Remove dirt and debris from concealed areas exposed by cutting and patching work regardless of whether the area will be left exposed or concealed when work is completed.
 - 2. Thoroughly clean spaces where work has been performed or used for access to work.
 - 3. Completely remove paint, mortar, oils, putty, and materials of similar nature.
 - 4. Thoroughly clean piping, conduit, and similar items, before painting or other finishing is applied.
 - 5. Remove debris daily. Remove debris which must be transported through public corridors in accordance with the hours specified by the Owner. Areas and pathways shared with occupants to be mop cleaned consistently. Construction site to be kept broom clean daily.
 - 6. Debris Containers:
 - a. Transport removal of debris in tightly sealed, covered, rubber tired containers.
 - b. Fit containers with clean polyethylene covers completely sealed at perimeters by taping or tying with wire.
 - c. Wipe containers clean before leaving construction area to prevent tracking of dust.
 - 7. Place rugs inside and outside construction barrier entrances and keep them clean, or replace them each day.
 - 8. Place covers over debris boxes between periods when they are being filled.
- E. Tenant Improvement area shall be kept in a neat, clean, and dust tight condition at all

times. Area shall be kept mop cleaned. Ensure adequate workers, cleaning materials, and equipment is always available.

- F. Vacuum carpets and occupied areas daily with certified HEPA-filtered vacuum cleaner.
- G. Legally and properly dispose of debris resulting from removal and reconditioning operations.
- H. Contractor shall clean the path of travel utilized by the Contractor to access the project area, and areas immediately outside the project area, on a daily basis. No construction materials or equipment can be left outside the project area. Contractor shall make a good faith effort to maintain a high degree of cleanliness outside the immediate project area to a standard acceptable to the Owner. Failure to do so will result in Contractor being charged for Owner's in-house janitorial services at the minimum rate prescribed by San Mateo Medical Center.
- I. General Cleaning during the regular progress of the Work is required by the General Conditions.
- J. Special Cleaning: Requirements for specific units of Work are included in appropriate Sections.
 - 1. Final Cleaning: Perform final cleaning of the Work at the time scheduled. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program. The final level of cleanliness will match that was provided by cleaning service, mop clean with wipe down of all surfaces. Comply with manufacturer's written instructions for operations.
 - 2. Complete the following cleaning operations before requesting Owner's Project Manager Inspection for Certification of Completion.
 - a. Remove labels which are not required as permanent labels.
 - b. Clean transparent materials, including mirrors and glass in doors and windows, to a polished condition. Remove putty and other substances which are noticeable as vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of dust, stains, films, and similar noticeable distracting substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wipe surfaces of mechanical and electrical equipment clean. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean the project site of rubbish, litter, and other foreign substances. Sweep paved areas to a broom-clean condition. Remove stains, spills, and other foreign deposits.
 - f. Clean and polish aluminum portions of windows remaining in place.
 - g. Removal of Protection: Except as otherwise indicated or requested by the Owner's Project Manager remove temporary protection devices and facilities which were installed during the course of the work to protect previously completed work during the remainder of the construction period.
 - h. Compliance: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site. Do not bury debris or excess materials on the Owner's property or leasehold site. Do not discharge volatile or

other harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION 01 74 00

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Prerequisites for acceptance.
 - 4. Warranties.
 - 5. Closeout Submittals
 - 6. Final cleaning.
 - 7. Repair of the Work.
 - 8. Project record documents.
 - 9. Training.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number.

- a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
4. Submit testing, adjusting, and balancing records.
 5. Submit sustainable design submittals not previously submitted.
 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 7. Submit any items listed on Testing, Inspections, and Observation (TIO) Form.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 3. Complete startup and testing of systems and equipment with completed and signed startup and test and balance documentation for all systems.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 6. Advise Owner of changeover in utility services.
 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Complete final cleaning requirements.
 10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 working days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
 - 1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 working days prior to date the work will be completed and ready for final inspection and tests.
 - 1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 - 4. Submit list of incomplete items in one of the following formats:
 - a. MS Excel electronic file. Architect will return annotated file.
 - b. Web-based project software upload. Utilize software feature for creating and updating list of incomplete items (punch list).

1.6 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

- B. Partial Occupancy: Submit properly executed warranties within 10 working days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- E. Warranties in Paper Form:
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- F. Provide additional copies of each warranty to include in operation and maintenance manuals. Provide clear warranty contact information by email and phone.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Maintain during construction period, on site, one set of the following record documents; record actual revisions to the Work:
 - 1. Contract Drawings
 - 2. Contract Specifications
 - 3. Addenda
 - 4. Executed Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples
 - 6. Manufacturer's Instructions for assembly, installation, and adjusting.
 - 7. Request For Information (RFI) Log
 - 8. Submittal Log
- B. Ensure entries are complete and accurate, enabling future reference by Owner.

- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction, including:
 - 1. Measured horizontal and vertical locations of below slab utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 3. Field changes of dimension and detail.
 - 4. Details not on original Contract Drawings.
- F. Stamp Record Drawings and Specifications cover sheet with "RECORD DOCUMENTS" for identification. Both Hard copies and Electronic copies of record documents will be required.
- G. Record the following kinds of information on the Record Document Drawings:
 - 1. Locations of Work buried under or outside the building, such as plumbing and electrical lines and conduits. Provide horizontal and vertical dimensions from fixed points.
 - 2. Actual numbering of each electrical circuit.
 - 3. Locations of all significant Work concealed inside the building, the locations of which are changed by the Contractor from those shown on the Drawings.
 - 4. Locations of all items, not necessarily concealed, which vary from the locations shown on the Drawings.
 - 5. Provide reflected ceiling plan with log list of junction boxes and valve numbers, functions and locations, keyed to numbered access panels identified on the plan.
- H. Record Drawings shall be done carefully and neatly by a competent drafter, familiar with the trade involved. Drawings shall be made using methods acceptable to the Owner's Representative and shall be available to the Owner at any time.
- I. Drawings shall be kept up to date during the entire progress of the Work, a condition required for processing monthly progress payments. Drawings shall be reviewed and approved by the Owner's Representative prior to ceiling close-up.
- J. Record all changes in size, location, and other features of installation shown on the Drawings.
- K. Record sufficient information so Work concealed in the building may be located with reasonable ease and accuracy. Accomplish by dimensioning or by stating the relationship to spaces in the building near which Work was installed. Owner's Representative's decision on what constitutes sufficient information shall be final.
- L. Contractor shall deliver as-built Record Documents.

- M. Shop Drawings: Provide reproducible record drawings, made from final Shop Drawings which have been updated to show actual conditions, for Work specified in the individual specification Sections.
- N. Record Documents are subject to review and acceptance by Owner's Representative. At completion of project, transfer all as-built information to reproducible and submit to Owner's Representative for final records.

3.2 OPERATION AND MAINTENANCE DATA

- A. Submit data on 8-1/2 x 11 inch text pages, bound in three-D side-ring binders with durable covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents - prepare a Table of Contents for each volume, with each product or system description identified, typed or printed on 24 pound white paper, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Owner's Representative, Contractor, subcontractors and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section, including a sequence of operations for systems. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates,
 - d. Photocopies of warranties and bonds.

- E. Submit one (1) draft copy of completed volumes 10 working days prior to final inspection. This copy will be reviewed and returned after final inspection, with Owner's Representative's comments. Revise content of all document sets as required prior to final submission.
- F. Submit three (3) sets of revised final volumes prior to Request for Final Application for Payment.
- G. Submit digital copy of revised final volumes prior to Request for Final Application for Payment.
 - 1. Format to be determined by Owner at the time of submittal.
- H. Work requiring instruction of Owner's Personnel is specified in the individual Sections of specifications.
- I. Schedule an Instructional Meeting or Meetings 2 weeks after instructional manuals have been submitted, reviewed, and accepted by Owner's Representative.
- J. Upon Owner's taking beneficial occupancy, or after final acceptance, whichever is earlier, fully qualified representatives of the manufacturers shall fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment, and maintenance of all equipment and systems.
- K. Basis of Instruction: Operating and Maintenance Manual. Review contents of Manual with personnel in full detail to explain all aspects of Operations and Maintenance.

3.3 SPARE PARTS, MAINTENANCE MATERIALS AND EXTRA MATERIAL

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.
- B. Deliver to Project site, place in location as directed, and obtain receipt prior to Request for Final Application for Payment.
- C. Label each container with project name and number, manufacturer number and color.
- D. Package with protective coating for storage.

3.4 TRAINING

- A. Provide and complete all training as specified in individual specification sections prior to Request for Final Application for Payment.

3.5 FINAL CLEANING

Per Section 01 74 00 "Cleaning and Waster Management."

3.6 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

SECTION 02 41 19
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
- 2. Salvage of existing items to be reused or recycled.

- B. Related Requirements:

- 1. Section 01 10 00 "Summary of Work" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
- 2. Section 01 73 29 "Cutting and Patching" for general protection and work procedures for alteration projects.
- 3. Section 01 74 00 "Clean and Waste management" for removal of improvements not part of selective demolition.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and Owner's storage area or per Owner's direction.
- C. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 PREINSTALLATION MEETINGS

- A. Schedule of Selective Demolition Activities: Indicate the following:
1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's Medical Center on-site operations are uninterrupted.
 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Use of elevator and stairs.
 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

1.6 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work.
 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Engage architect and structural engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 PREPARATION

- A. Clean the substrata free from rust, dirt, dust, grease, oil, and other substances which could affect the bond of fireproofing; sandblast surfaces if normal cleaning methods fail to remove adhering substances
- B. Primed steel surfaces to receive fireproofing:
 - 1. Coordinate the work of this Section as necessary to assure proper interface with the work of adjacent trades;
 - 2. Comply with testing requirements contained in “Fire Resistance Directory” of Underwriters Laboratories, Inc.
- C. Insofar as possible:
 - 1. Clips, hangers, and supports, sleeves, and other attachments to fireproofing substrata shall be in place prior to application of fireproofing;
 - 2. Until the work of this Section is complete, do not position ducts, piping, studs, and/or equipment in other suspended materials which would interfere with this application.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 2. Arrange to shut off utilities with utility companies.
 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required as noted on drawings to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in General Requirements.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of

construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and maintain until the Fire Marshall and authority having jurisdiction has given clearance after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly. Comply with disposal and removal of construction waste and recycling specified in General Requirements. Comply with City and County of San Mateo waste removal and recycling regulations.

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

C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.

3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area or per Owner's direction
5. Protect items from damage during transport and storage.

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

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings. Do not use methods requiring solvent-based adhesive strippers.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site according to Section 00 62 23 "Construction Waste Requirement & Form."
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 4. Comply with requirements specified in Section 01 73 29 "Cutting and Patching."

3.8 CLEANING

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

END OF SECTION 02 41 19

SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Exterior non-load-bearing wall framing.
 - 2. Interior non-load-bearing wall framing exceeding height limitations of standard, nonstructural metal framing.
 - 3. Ceiling joist framing.
- B. Related Requirements:
 - 1. Section 05 50 00 "Metal Fabrications" for miscellaneous steel shapes, masonry shelf angles, and connections used with cold-formed metal framing.
 - 2. Section 03 60 00 "Grouting".
 - 3. Section 09 22 16 "Non-Structural Metal Framing" for standard, interior non-load-bearing, metal-stud framing, with height limitations and ceiling-suspension assemblies.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

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

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Welding certificates.
- C. Product Certificates: For each type of code-compliance certification for studs and tracks.

- D. Product Test Reports: For each listed product, for tests performed by a qualified testing agency.
 - 1. Steel sheet.
 - 2. Expansion anchors.
 - 3. Power-actuated anchors.
 - 4. Mechanical fasteners.
 - 5. Vertical deflection clips.
 - 6. Horizontal drift deflection clips
 - 7. Miscellaneous structural clips and accessories.

- E. Evaluation Reports: For nonstandard cold-formed steel framing, post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

- B. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

- C. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association or the Steel Stud Manufacturers Association.

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. AllSteel & Gypsum Products, Inc.
 - 2. CEMCO; California Expanded Metal Products Co.
 - 3. ClarkDietrich Building Systems.
 - 4. Craco Manufacturing, Inc.
 - 5. Custom Stud.
 - 6. Design Shapes in Steel.
 - 7. Olmar Supply, Inc.
 - 8. SCAFCO Steel Stud Company.

9. United Metal Products, Inc.
10. Or approved equal.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.
 1. Design Loads: As indicated on Drawings.
 2. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
- B. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100, AISI S200, and the following:
 1. Wall Studs: AISI S211.
 2. Headers: AISI S212.
- C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency, or as indicated on Drawings.
 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency acceptable to authorities having jurisdiction.

2.3 COLD-FORMED STEEL FRAMING MATERIALS

- A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:
 1. Coating: G60, A60, AZ50, or GF30.
- B. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
 1. Coating: G60.

2.4 INTERIOR NON-LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: As indicated on Drawings.
 2. Flange Width: As indicated on Drawings.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: Matching steel studs.
 2. Flange Width: 1-1/4 inches minimum.
- C. Single Deflection Track:

1. See drawings for specifications.

2.5 CEILING JOIST FRAMING

- A. Steel Ceiling Joists: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: As indicated on Drawings.
 2. Flange Width: As indicated on Drawings.

2.6 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
 1. Supplementary framing.
 2. Bracing, bridging, and solid blocking.
 3. Web stiffeners.
 4. Anchor clips.
 5. End clips.
 6. Foundation clips.
 7. Gusset plates.
 8. Stud kickers and knee braces.
 9. Joist hangers and end closures.
 10. Hole-reinforcing plates.
 11. Backer plates.

2.7 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- B. Expansion Anchors: Hilti Kwik Bolt 'TZ' or as indicated on Drawings.
- C. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
 1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.
- E. Welding Electrodes: Comply with AWS standards.

2.8 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20.
- B. Cement Grout: Portland cement, ASTM C 150/C 150M, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- C. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C 1107/C 1107M, and with a fluid consistency and 30-minute working time.
- D. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.
- E. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

2.9 FABRICATION

- A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.
 - 2. Cut framing members by sawing or shearing; do not torch cut.
 - 3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners with screws penetrating joined members by no fewer than three exposed screw threads.
 - 4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to manufacturer's recommendations.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies by means that prevent damage or permanent distortion.
- C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 feet and as follows:
 - 1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 - 2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, conditions, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that required to obtain fire-resistance ratings indicated. Protect remaining fire-resistive materials from damage.
- C. Install load-bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.
- D. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

- A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

- a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners, install according to Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- H. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.4 INTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure, as indicated on Drawings.
- B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:
- 1. Stud Spacing: As indicated on Drawings.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
- 1. Install single deep-leg deflection tracks and anchor to building structure.
- E. Install horizontal bridging in wall studs, as indicated on Drawings.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 ERECTION TOLERANCES

- A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.6 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 40 00

SECTION 07 81 00
APPLIED FIREPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes sprayed fire-resistive materials.

1.3 DEFINITIONS

- A. SFRM: Sprayed fire-resistive materials.

1.4 ACTION SUBMITTALS

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

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Product Certificates: For each type of fireproofing.
- C. Evaluation Reports: For fireproofing, from ICC-ES.
- D. Preconstruction Test Reports: For fireproofing.
- E. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.
 - 1. Bond Strength: Test for cohesive and adhesive strength according to ASTM E 736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
 - 2. Density: Test for density according to ASTM E 605. Provide density indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
 - 3. Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with fireproofing.
 - 4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 5. For materials failing tests, obtain applied-fireproofing manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 44 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fireproofing from single source.
- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Steel members are to be considered unrestrained unless specifically noted otherwise.
- D. Asbestos: Provide products containing no detectable asbestos.

2.2 SPRAYED FIRE-RESISTIVE MATERIALS

- A. Sprayed Fire-Resistive Material: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Isolatek International.
 - b. Pyrok, Inc.
 - c. Southwest Fireproofing Products Co.
 - d. Or approved equal.
 2. Application: Designated for exterior use by a qualified testing agency acceptable to authorities having jurisdiction.
 3. Bond Strength: Minimum 430-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E 736.
 4. Density: Not less than density specified in the approved fire-resistance design, according to ASTM E 605.
 5. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch.
 6. Combustion Characteristics: ASTM E 136.
 7. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 10 or less.
 - b. Smoke-Developed Index: 10 or less.
 8. Corrosion Resistance: No evidence of corrosion according to ASTM E 937.
 9. Deflection: No cracking, spalling, or delamination according to ASTM E 759.
 10. Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
 11. Air Erosion: Maximum weight loss of 0.025 g/sq. ft. in 24 hours according to ASTM E 859.
 12. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21 or rating of 10 according to ASTM D 3274 when tested according to ASTM D 3273.
 13. Sound Absorption: NRC of 0.50 to 0.75 according to ASTM C 423 for Type A mounting according to ASTM E 795.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.
- B. Substrate Primers: Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:
 - 1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 2. Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.
- C. Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.
- D. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.
- E. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.
- F. Sealer: Transparent-drying, water-dispersible, tinted protective coating recommended in writing by fireproofing manufacturer for each fire-resistance design, as recommended by manufacturer.
- G. Topcoat: Suitable for application over applied fireproofing; of type recommended in writing by fireproofing manufacturer for each fire-resistance design.
 - 1. Cement-Based Topcoat: Factory-mixed, cementitious hard-coat formulation for trowel or spray application over SFRM, as recommended by manufacturer.
 - 2. Water-Based Permeable Topcoat: Factory-mixed formulation for brush, roller, or spray application over applied SFRM, as recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design.

1. Verify that substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
 2. Verify that objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
 3. Verify that substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.
- B. Verify that concrete work on steel deck is complete before beginning fireproofing work.
- C. Verify that roof construction, installation of rooftop HVAC equipment, and other related work are complete before beginning fireproofing work.
- D. Conduct tests according to fireproofing manufacturer's written instructions to verify that substrates are free of substances capable of interfering with bond.
- E. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.
- B. Clean substrates of substances that could impair bond of fireproofing.
- C. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.

3.3 APPLICATION

- A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
- B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.

D. Metal Decks:

1. Do not apply fireproofing to underside of metal deck substrates until concrete topping, if any, is completed.
2. Do not apply fireproofing to underside of metal roof deck until roofing is completed; prohibit roof traffic during application and drying of fireproofing.

E. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written instructions for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

F. Spray apply fireproofing to maximum extent possible. After the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.

G. Extend fireproofing in full thickness over entire area of each substrate to be protected.

H. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.

I. For applications over encapsulant materials, including lockdown (post-removal) encapsulants, apply fireproofing that differs in color from that of encapsulant over which it is applied.

J. Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.

K. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.

L. Cure fireproofing according to fireproofing manufacturer's written instructions.

M. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Test and inspect as required by the IBC, as indicated on Schedule of Special Inspections.

- B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Fireproofing will be considered defective if it does not pass tests and inspections.
 - 1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
 - 2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
- D. Prepare test and inspection reports.

3.5 CLEANING, PROTECTING, AND REPAIRING

- A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.
- B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing is without damage or deterioration at time of Substantial Completion.
- C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.
- D. Repair fireproofing damaged by other work before concealing it with other construction.
- E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 07 81 00

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Butyl joint sealants.
 - 2. Latex joint sealants.
 - 3. Joint sealant backing.
 - 4. Acoustical joint sealants.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.

1.4 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C 1311.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Bostik, Inc.
 - b. Pecora Corporation.
 - c. Or approved equal per Section 01 25 00 "Substitution Procedure."

2.3 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Pecora Corporation.
 - b. Sherwin-Williams Company (The).
 - c. Tremco Incorporated.
 - d. Or approved equal per Section 01 25 00 "Substitution Procedure."

2.4 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

- a. Alcot Plastics Ltd.
 - b. BASF Corporation; Construction Systems.
 - c. Construction Foam Products; a division of Nomaco, Inc.
 - d. Or approved equal per Section 01 25 00 "Substitution Procedure."
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C 834.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Pecora Corporation.
 - b. Serious Energy Inc.
 - c. Tremco, Inc.
 - d. Or approved equal per Section 01 25 00 "Substitution Procedure."
- B. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.
- C. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E 90.

2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - d. Resinous flooring.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such

contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
- G. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.

- B. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C 919, ASTM C 1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.

3.5 FIELD QUALITY CONTROL

- A. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.6 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.7 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.8 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - c. And as indicated on the drawings.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:

- a. Tile control and expansion joints.
 - b. Vertical joints on exposed surfaces of partitions.
 - c. Perimeter joints between interior wall surfaces and frame of interior doors and windows.
 - d. And as indicated on the drawings.
2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Control and expansion joints in resinous flooring.
 - d. And as indicated on the drawings.
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Concealed mastics.
1. Joint Locations:
 - a. Aluminum thresholds.
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07 92 00

SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:

- 1. Interior standard hollow metal doors and frames.

- B. Related Requirements:

- 1. Section 08 71 00 "Door Hardware" for door hardware for hollow-metal doors.
 - 2. Section 08 80 00 "Glazing" for non-rated and tempered glass.
 - 3. Section 08 88 13 "Fire-Resistant Glazing" for fire-rated glass.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 ACTION SUBMITTALS

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

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

C. Samples for Verification:

1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.

D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

- D. Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain hollow-metal work from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 1. Smoke- and Draft-Control Assemblies: Provide assemblies with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
- B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.3 INTERIOR STANDARD HOLLOW METAL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3; SDI A250.4, Level A.
 - 1. Doors:
 - a. Type: As indicated on Drawings.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated steel sheet, minimum thickness of 0.053 inch.
 - d. Edge Construction: Model 2, Seamless.
 - e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
 - f. Core: Manufacturer's standard.
 - g. Fire-Rated Core: Manufacturer's standard core for fire-rated doors.
 - 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.

- b. Construction: Full profile welded.
- c. Exposed Finish: Prime.

2.4 BORROWED LITES

- A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch.
- B. Construction: Full profile welded.
- C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.
- D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
 - 2. Quantity & location: As indicated on the drawings.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.
- D. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

2.6 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- G. Glazing: Comply with requirements in Section 088000 "Glazing" and Section 088813 "Fire-Resistant Glazing".

2.7 FABRICATION

- A. Door Astragals: Provide astragals as indicated on Drawings.
- B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
 - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
- D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.
 - 1. Provide stops and moldings flush with face of door, and with beveled stops unless otherwise indicated.
 - 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 - 3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

4. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.8 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
 2. Fire-Rated Openings: Install frames according to NFPA 80.
 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 4. Solidly pack mineral-fiber insulation inside frames.
 5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8.
 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
 3. Smoke-Control Doors: Install doors according to NFPA 105.
- D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.4 CLEANING AND TOUCHUP

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 08 11 13

SECTION 08 12 16

ALUMINUM FRAMES

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 Summary

- A. Section Includes: Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
 - 1. Types of Kawneer Aluminum Storefront Systems include:
 - a. InFrame™ Interior Framing System - 2" x 6" (50.8 x 152.4) nominal dimension; Non-Thermal; Center Glazed, Screw Spline, Punched Opening Fabrication.
- B. Related Sections:
 - 1. 07 92 00 "Joint Sealants"
 - 2. 08 80 00 "Glazing"
 - 3. 08 41 13 "Aluminum-Framed Entrances and Storefronts".

1.3 Definitions

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG)

1.4 Performance Requirements

- A. Storefront System Performance Requirements: Interior framing system.

1.5 Submittals

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum frames indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
- C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- D. Samples for Verification: For aluminum frames and components required.
- E. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum frames, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
 - 1. Joinery, including concealed welds.
 - 2. Anchorage.
 - 3. Expansion provisions.
 - 4. Glazing.

5. Flashing and drainage.

F. Other Action Submittals:

1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.6 Quality Assurance

- A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of providing aluminum frames that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. Source Limitations: Obtain aluminum frames through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum frames and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.7 Project Conditions

- A. Field Measurements: Verify actual dimensions of aluminum frame openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.8 Warranty

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
- B. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. Basis-of-design Product:
 1. Kawneer Company Inc.
 2. InFrame™ Interior Framing System (Non-Thermal)
 3. System Dimensions: 2" x 6" (50.8 x 152.4) nominal dimension

4. Glass: Center Plane

2.2 Materials

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.
- B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
- F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.3 Storefront Framing System

- A. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action
- D. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- E. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.4 Glazing Systems

- A. Glazing: As specified in Division 08 Section "Glazing".
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.

- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
- E. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:
 - 1. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.

2.5 Entrance Door Systems

- A. Entrance Doors: As specified in Division 08 41 13 Section "Aluminum-Framed Entrances and Storefronts".

2.6 Accessory Materials

- A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Section 07 92 00 "Joint Sealants".
- B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.7 Fabrication

- A. Extrude aluminum shapes before finishing.
- B. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fit joints; make joints flush, hairline and weatherproof.
 - 3. Physical and thermal isolation of glazing from framing members.
 - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 5. Provisions for field replacement of glazing.
 - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- C. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- D. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.
 - 1. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 Aluminum Finishes

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes:
- B. Factory Finishing

1. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear) (Optional).

PART 3 - EXECUTION

3.1 Examination

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight aluminum frame installation.
 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.
 3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum framed storefront system, accessories, and other components.
- B. Install aluminum framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 Field Quality Control

- A. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.4 Adjusting, Cleaning, and Protection

- A. Clean aluminum surfaces immediately after installing aluminum framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

County of San Mateo – Department of Public Works
San Mateo Medical Center (SMMC)
SMMC Prevent Self Harm & Ligature Project No. P30F1
OSHPD No. S191567-41-00

Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 08 12 16

SECTION 08 41 13

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 Summary

- A. This Section includes Kawneer Aluminum Entrances, glass and glazing, and door hardware and components.
 - 1. Types of Kawneer Aluminum Entrances include:
 - a. 500 Swing Door; Wide stile, 5" (127 mm) vertical face dimension, 1-3/4" (44.5 mm) depth, high traffic applications.
- B. Related Sections:
 - 1. 08 12 16 "Aluminum-Frames"
 - 2. 08 80 00 "Glazing"

1.3 Definitions

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.4 Performance Requirements

- A. General Performance: Aluminum-framed entrance system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Aluminum Framed Entrance Performance Requirements:
 - 1. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf (75 PA) for single and pairs of doors. A single 3'0" x 7'0" (915 mm x 2134 mm) entrance door and frame shall not exceed 1.0 cfm/ft². A pair of 6'0" x 7'0" (1830 mm x 2134 mm) entrance doors and frame shall not exceed 1.0 cfm/ft².
 - 2. Structural Performance: Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity.

1.5 Submittals

- A. Product Data: Include construction details, material descriptions, and fabrication methods, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed entrance door indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed entrance doors.
- D. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.6 Project Conditions

- A. Field Measurements: Verify actual dimensions of aluminum-framed entrance door openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.7 Warranty

- A. Manufacturer’s Warranty: Submit, for Owner’s acceptance, manufacturer’s standard warranty.
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. Basis-of-Design Product:
 - 1. Kawneer Company Inc.
 - 2. The door stile and rail face dimensions of the 500 entrance door will be as follows

Door	Vertical Stile	Top Rail	Bottom Rail	Optional Bottom Rail
500	5" (127 mm)	5" (127 mm)		10" (254 mm)
 - 3. Major portions of the door members to be 0.125" (3.2) nominal in thickness and glazing molding to be 0.05" (1.3) thick.
 - 4. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
 - 5. Provide adjustable glass jacks to help center the glass in the door opening.

2.2 Materials

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum-framed entrance door manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" (2.3 mm) wall thickness at any location for the main frame and door leaf members.
- B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum-framed entrance door members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
 - 1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.

2.3 Glazing

- A. Glazing: As indicated on Drawing
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.4 Hardware

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum-framed entrance doors.
- B. Standard Hardware:
 - 1. Weather-stripping:
 - a. Meeting stiles on pairs of doors shall be equipped with an adjustable astragal utilizing wool pile with polymeric fin.
 - b. The door weathering on a single acting offset pivot or butt hung door and frame (single or pairs) shall be comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing.
 - 2. Sill Sweep Strips: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners (Necessary to meet specified performance tests).
 - 3. Threshold: As indicated on Drawings.
 - 4. Continuous Hinge: As indicated on Drawings.
 - 5. Push/Pull: As indicated on Drawings.
 - 6. Closer: As indicated on Drawings.
 - 7. Security Lock/Dead Lock: As indicated on Drawings.
 - 8. Latch Handle: As indicated on Drawings.

9. Cylinder(s)/Thumbturn: As indicated on Drawings.

2.5 Fabrication

- A. Fabricate aluminum-framed entrance doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
- B. Fabricate aluminum-framed glass doors that are re-glazable without dismantling perimeter framing.
 1. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (29 mm) long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 3. Prepare components with internal reinforcement for door hardware.
 4. Arrange fasteners and attachments to conceal from view.
- C. Weather-stripping: Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.

2.6 Aluminum Finishes

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
 1. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear) (Optional).

PART 3 - EXECUTION

3.1 Examination

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated installation.
 1. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed entrance doors, hardware, accessories, and other components.
- B. Install aluminum-framed entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

- C. Set sill threshold in bed of sealant, as indicated, for weather tight construction.
- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 Field Quality Control

- A. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.4 Adjusting, Cleaning, and Protection

- A. Clean aluminum surfaces immediately after installing aluminum-framed entrance doors. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 08 41 13

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Mechanical door hardware for the following:
 - a. Swinging doors.
- 2. Cylinders for door hardware specified in other Sections.
- 3. Electrified door hardware.

- B. Related Requirements:

- 1. Section 08 41 13 "Aluminum-Framed Entrances and Storefronts"
- 2. Section 08 11 13 "Hollow Metal Doors and Frames" for astragals provided as part of labeled fire-rated assemblies and for door silencers provided as part of hollow-metal frames.

1.3 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify

existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.4 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For electrified door hardware.

1. Include diagrams for power, signal, and control wiring.
2. Include details of interface of electrified door hardware and building safety and security systems.

C. Door Hardware Schedule: Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Coordinate hardware submittals with hardware schedule provided on sheet A7.4.
2. Submittal Sequence: Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
3. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
4. Content: Include the following information:
 - a. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - b. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
 - c. Fastenings and other installation information.
 - d. Mounting locations for door hardware.
 - e. List of related door devices specified in other Sections for each door and frame.

D. Keying Schedule: Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of door hardware from single manufacturer.
 - 1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
- B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 3.0 cfm/sq. ft. at the tested pressure differential of 0.10-inch wg of water.
- C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with information provided on the Drawings.

2.3 SCHEDULED DOOR HARDWARE

- A. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.
 1. Door hardware as indicated on Drawings.

2.4 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.
 1. Existing System:
 - a. Master key or grand master key locks to Owner's existing system.
 - b. Re-key Owner's existing master key system into new keying system.
- B. Keys: Nickel silver.
 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: Information to be furnished by Owner.

2.5 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.
 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and

hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 2. Fire-Rated Applications:
 - a. Wood or Machine Screws: For the following:
 - 1) Hinges mortised to doors or frames.
 - 2) Strike plates to frames.
 - 3) Closers to doors and frames.
 - b. Steel Through Bolts: For the following unless door blocking is provided:
 - 1) Surface hinges to doors.
 - 2) Closers to doors and frames.
 - 3) Surface-mounted exit devices.
 3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.6 FINISHES

- A. Provide finishes complying with BHMA A156.18 to match existing hardware.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated on Drawings.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with Architect.
 - 1. Configuration: Provide one power supply for each door opening with electrified door hardware.

3.3 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: Engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
 - 1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
 - 2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
 - 3. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

END OF SECTION 08 71 00

SECTION 08 80 00

GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Glass for doors and interior borrowed lites.
 - 2. Glazing sealants and accessories.
- B. Related Requirements:
 - 1. Section 08 88 13 "Fire-Resistant Glazing."

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 SUBMITTALS

- A. Product Data: For each type of product.
- B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
 - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
- B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

- 1. For monolithic-glass lites, properties are based on units with lites of thickness indicated.

2.3 GLASS PRODUCTS, GENERAL

- A. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- B. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

2.4 GLASS PRODUCTS

- A. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3.

2.5 GLAZING SEALANTS

- A. General:
 - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 - 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.

2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass

manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 08 80 00

SECTION 08 88 13
FIRE-RESISTANT GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-protection-rated glazing.
 - 2. Fire-resistance-rated glazing.

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 SUBMITTALS

- A. Product Data: For each type of product.
- B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- C. Product Certificates: For each type of glass and glazing product, from manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install fire-resistant glazing until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
- B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; deterioration of glazing materials; or other defects in construction.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organization below unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: "Glazing Manual."
- B. Safety Glazing Labeling: Permanently mark glazing with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, glass thickness, and safety glazing standard with which glass complies.

2.4 GLASS PRODUCTS

- A. Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class I (clear) unless otherwise indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.5 FIRE-PROTECTION-RATED GLAZING

- A. Fire-Protection-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on positive-pressure testing according to NFPA 257 or UL 9, including the hose-stream test, and shall comply with NFPA 80.
- B. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label glazing as indicated on Drawings.
- C. Fire-Protection-Rated Tempered Glass: Thickness indicated on the drawings, fire-protection-rated tempered glass; and complying with 16 CFR 1201, Category II.

2.6 FIRE-RESISTANCE-RATED GLAZING

- A. Fire-Resistance-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistance ratings indicated, based on testing according to ASTM E 119 or UL 263.
- B. Fire-Resistance-Rated Glazing Labeling: Permanently mark fire-resistance-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label glazing as indicated on Drawings.

2.7 GLAZING ACCESSORIES

- A. Provide glazing gaskets, glazing sealants, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-resistant glazing products with which products are used for applications and fire-protection ratings indicated.
- B. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated.
 - 1. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

- C. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.
 - 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 - 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

- D. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- C. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.9 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with manufacturing and installation tolerances, including those for size, squareness, and offsets at corners, and for compliance with minimum required face and edge clearances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate fire side and protected side. Label or mark units as needed so that fire side and protected side are readily identifiable. Do not use materials that leave visible marks in the completed work.

3.3 GLAZING, GENERAL

- A. Use methods approved by testing agencies that listed and labeled fire-resistant glazing products.
- B. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials unless more stringent requirements are indicated, including those in referenced glazing publications.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances unless gaskets

- and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
 - I. Set glass lites with proper orientation so that coatings face fire side or protected side as specified.
 - J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
 - K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop, so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial washaway from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 FIRE-PROTECTION-RATED GLAZING SCHEDULE

- A. 45-minute fire-protection-rated impact resistant glazing; as indicated on the drawings.
- B. 60-minute fire-protection-rated impact resistant glazing; as indicated on the drawings.

3.9 FIRE-RESISTANCE-RATED GLAZING SCHEDULE

- A. 20-minute fire-resistance-rated impact resistant glazing; as indicated on the drawings.

END OF SECTION 08 88 13

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

1.2 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Tile backing panels.

B. Related Requirements:

1. Section 05 40 00 "Cold-formed metal framing" for non-structural steel framing and suspension systems that support gypsum board panels.

1.3 SUBMITTALS

- ###### **A. Product Data:** For each type of product.

1.4 DELIVERY, STORAGE AND HANDLING

- ###### **A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.**

1.5 FIELD CONDITIONS

- ###### **A. Environmental Limitations:** Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

- ###### **B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.**

- ###### **C. Do not install panels that are wet, moisture damaged, and mold damaged.**

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C 1396/C 1396M.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Continental Building Products, LLC.
 - d. USG Corporation.
 - e. Or approved equal per Section 01 25 00 "Substitution Procedure."
 - 2. Thickness: as indicated on Drawings.
 - 3. Long Edges: Tapered.
- B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Continental Building Products, LLC.
 - d. USG Corporation.
 - e. Or approved equal per Section 01 25 00 "Substitution Procedure."
 - 2. Thickness: as indicated on Drawings.
 - 3. Long Edges: Tapered.
- C. Gypsum Ceiling Board: ASTM C 1396/C 1396M.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Continental Building Products, LLC.

- d. USG Corporation.
- e. Or approved equal per Section 01 25 00 “Substitution Procedure.”
2. Thickness: as indicated on Drawings.
3. Long Edges: Tapered.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or ASTM C 1325, with manufacturer's standard edges.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. CertainTeed Corporation.
 - b. Custom Building Products.
 - c. USG Corporation.
 - d. Or approved equal per Section 01 25 00 “Substitution Procedure.”
 2. Thickness: as indicated on Drawings.
 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
- B. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Georgia-Pacific Building Products.
 - d. USG Corporation.
 - e. Or approved equal per Section 01 25 00 “Substitution Procedure.”
 2. Core:
 - a. as indicated on Drawings.

2.5 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. L-Bead: L-shaped; exposed long flange receives joint compound.
 - d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - e. Expansion (control) joint.
 - f. Curved-Edge Cornerbead: With notched or flexible flanges.
- B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
2. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
 2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 3. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: Use joint compound recommended by manufacturer.
 2. Embedding and First Coat: Use joint compound recommended by manufacturer.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use joint compound recommended by sheathing board manufacturer.
 4. Finish Coat: For third coat, use joint compound recommended by sheathing board manufacturer.
 5. Skim Coat: For final coat of Level 5 finish, use joint compound recommended by sheathing board manufacturer.
 6. Exterior Gypsum Soffit Board: Use joint compound recommended by sheathing board manufacturer.
 7. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.
- D. Joint Compound for Tile Backing Panels:
 1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
 2. Cementitious Backer Units: As recommended by backer unit manufacturer.
 3. Water-Resistant Gypsum Backing Board: Use joint compound recommended by backer board manufacturer.

2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings.
 1. Furnish concrete inserts and other devices indicated to other trades for installation well in advance of time needed for coordination with other construction.
- B. Before sprayed-on fireproofing is applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed-on fireproofing. Where offset anchor plates are required, provide continuous units fastened to building structure not more than 24 inches o.c.
- C. After sprayed-on fireproofing has been applied, remove only as much fireproofing as needed to complete installation of gypsum board assemblies without reducing thickness of fireproofing below that required to obtain fire-resistive rating indicated. Protect remaining fireproofing from damage.

3.3 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.

- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. Where indicated on drawings, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.4 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Wallboard Type: As indicated on Drawings.
 - 2. Type X: As indicated on Drawings.
 - 3. Ceiling Type: Ceiling surfaces.

4. Type C: Where required for specific fire-resistance-rated assembly indicated on Drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels to minimize the number of abutting end joints or avoid them entirely, or as required by fire-resistance-rated assembly.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-shaped furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.5 APPLYING TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.
- B. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.
- C. Water-Resistant Backing Board: Install where indicated and at wet locations not to receive tile, with 1/4-inch gap where panels abut other construction or penetrations.
- D. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.6 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints where indicated and according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners.
 - 2. Bullnose Bead: Use where indicated.
 - 3. LC-Bead: Use at exposed panel edges.
 - 4. L-Bead: Use where indicated.
 - 5. U-Bead: Use where indicated.
 - 6. Curved-Edge Cornerbead: Use at curved openings.
- D. Aluminum Trim: Install in locations indicated on Drawings.

3.7 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 2: Panels that are substrate for tile, Panels that are substrate for acoustical tile, and Where indicated on Drawings.
 - 3. Level 3: Where indicated on Drawings.
 - 4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in Section 09 91 23 "Interior Painting."
- E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.8 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 09 30 00

TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Ceramic tile
 - 2. Waterproofing membrane.
 - 3. Metal edge strips.
- B. Related Requirements:
 - 1. Section 09 29 00 "Gypsum Board" for cementitious backer units.
 - 2. Section 09 65 16 "Resilient Sheet Flooring."

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PREINSTALLATION MEETINGS

1.5 SUBMITTALS

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

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
 - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
 - 2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
 - 1. Waterproof membrane.
 - 2. Crack isolation membrane.
 - 3. Cementitious backer units.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

2.3 TILE PRODUCTS

- A. Ceramic Tile Type: Factory-mounted glazed ceramic mosaic tile.
 - 1. Basis-of-design: As indicated on the Drawings.
 - 2. Composition: Porcelain.
 - 3. Module Size: As indicated on the drawings.
 - 4. Surface: Smooth, without abrasive admixture.
 - 5. Dynamic Coefficient of Friction: Not less than 0.42.
 - 6. Tile Color and Pattern: As indicated on the drawings.
 - 7. Grout Color: As selected by Architect from manufacturer's full range.
- B. Ceramic Tile Type: Glazed wall tile.

1. Module Size: As indicated on the Drawings.
2. Face: Plain with modified square edges or cushion edges.
3. Tile Color and Pattern: As indicated on drawings.
4. Grout Color: As selected by Architect from manufacturer's full range.
5. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Wainscot Cap: Bullnose cap.
 - b. External Corners: Surface bullnose, same size as adjoining flat tile.
 - c. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

2.4 WATERPROOF MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

2.5 SETTING MATERIALS

- A. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
 1. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.6 GROUT

- A. Water-Cleanable Epoxy Grout: ANSI A118.3.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Custom Building Products.
 - b. LATICRETE SUPERCAP, LLC.
 - c. Or approved equal per Section 01 25 00 "Substitution Procedure."
 2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

2.7 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

2.8 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped as indicated on the drawings.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Unless indicated otherwise on Drawings, lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Mosaic Tile: 1/16 inch.
 - 2. Glazed Wall Tile: 1/8 inch.
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Metal Edge Strips: Install at locations indicated.
- K. Grout Sealer: Apply grout sealer to grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 WATERPROOFING INSTALLATION

- A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
- B. Allow waterproofing to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.5 CRACK ISOLATION MEMBRANE INSTALLATION

- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.
- B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.6 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.

3.7 PROTECTION

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION 09 30 00

SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Thermoplastic-rubber base.

1.3 SUBMITTALS

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

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive resilient products during the following periods:
 - 1. 48 hours before installation.

2. During installation.
 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOPLASTIC-RUBBER BASE

- A. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic).
1. Manufacturer: As indicated on Drawings, or approved equal per Section 01 25 00 "Substitution Procedure."

2.2 INSTALLATION MATERIALS

- A. Adhesives: Low pollutant emitting, water based type recommended by adhered product manufacturer for each application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.
- H. Job-Formed Corners (only use if preformed corners are unavailable):
 - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 inches in length.
 - a. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 inches in length.
 - a. Miter corners to minimize open joints.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.
 2. Sweep and vacuum horizontal surfaces thoroughly.
 3. Damp-mop horizontal surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION 09 65 13

SECTION 09 65 16
RESILIENT FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Integral cove wall base.
 - 2. Unbacked rubber sheet flooring.
 - 3. Vinyl composition floor tile.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include manufacturer's written installation recommendations for each type of substrate.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Resilient Sheet Flooring: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, in roll form and in full roll width for each type, color, and pattern of flooring installed.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by resilient sheet flooring manufacturer for installation techniques required.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Coordinate mockups in this Section with mockups specified in other Sections.
 - a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient sheet flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store rolls upright.

1.8 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive resilient sheet flooring during the following periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.
- C. Close spaces to traffic during resilient sheet flooring installation.
- D. Close spaces to traffic for 48 hours after resilient sheet flooring installation.
- E. Install resilient sheet flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 UNBACKED RUBBER SHEET FLOORING

- A. Manufacturer:
 - 1. Noraplan
 - 2. Or approved equal per Section 01 25 00 "Substitution Procedure."
- B. Product Standard: ASTM F 1859.
 - 1. Type: Homogenous rubber sheet flooring
 - 2. Thickness: 3mm
 - 3. Hardness: Not less than required by ASTM F 1859
- C. Wearing Surface: Smooth
- D. Sheet Width: As standard with manufacturer.
- E. Seamless-Installation Method: Heat Welded
- F. Colors and Patterns: As indicated on the drawings.

2.3 VINYL COMPOSITION FLOOR TILE - VCT

- A. Manufacturer:
 - 1. Armstrong EXCELON Flooring
 - 2. Or approved equal per Section 01 25 00 "Substitution Procedures."
- B. Tile Standard: ASTM F 1066
- C. Wearing Surface: Smooth
- D. Thickness: 3.2mm
- E. Size: 12 by 12 inches
- F. Colors and Patterns: As indicated on drawings.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.
- C. Seamless-Installation Accessories for Sheet Flooring:
 - 1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
 - a. Colors: Match flooring, as approved by architect.
- D. Integral-Flash-Cove-Base Accessories:
 - 1. Cove Strip: 1-inch radius provided or approved by resilient sheet flooring manufacturer.
 - 2. Cap Strip: As indicated on drawings.
 - 3. Corners: Welded inside and outside corners using heat welding beads with color to match.
- E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient sheet flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient sheet flooring.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.
- B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
 3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient sheet flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.
 4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Relative Humidity Test: Using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum percent relative humidity level measurement approved by manufacturer.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient sheet flooring until materials are the same temperature as space where they are to be installed.
1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient sheet flooring.
- B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.
- C. Lay out resilient sheet flooring as follows:
1. Maintain uniformity of flooring direction.
 2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
 3. Match edges of flooring for color shading at seams.
 4. Avoid cross seams.
- D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.

- G. Install resilient sheet flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.
- H. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- I. Seamless Installation:
 - 1. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.
- J. Integral-Flash-Cove Base: Cove resilient sheet flooring to the height indicated on drawings, up vertical surfaces. Support flooring at horizontal and vertical junction with cove strip. Butt at top against cap strip.
 - 1. Weld inside and outside corners per manufacturers standards.

3.4 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles square with room axis and as indicated by the drawings.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles with grain running in one direction and with colors as indicated by the drawings.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.
- B. Perform the following operations immediately after completing resilient sheet flooring installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient sheet flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, adhesive, and blemishes from flooring surfaces before applying liquid floor polish.
 - 1. Apply manufacturer recommended number of coats.
- E. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION 09 65 16

SECTION 09 68 00

CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Modular carpet tile.
 - 2. Tufted carpet.
- B. Related Requirements:
 - 1. Section 09 65 13 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.
- C. Abbreviations:
 - 1. Requirements pertaining to multiple products will pertain to all products and shown in parenthesis.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Shop Drawings: For carpet tile installation, plans showing the following:
 - 1. Carpet type, color, and dye lot.
 - 2. Type of subfloor.
 - 3. Pattern of installation.
 - 4. Pattern type, location, and direction.
 - 5. Transition details to other flooring materials.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet (tile), including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet (tile).

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd..
 2. Carpet: Full-width rolls equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd..

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI's "CRI Carpet Installation Standard."

1.8 FIELD CONDITIONS

- A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet (tiles) until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet (tiles) over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet (tile) manufacturer. Provide moisture test on all slab on grade construction before installation, test to be provided to Architect and Owner prior to installation of carpeting.
- D. Where demountable partitions or other items are indicated for installation on top of carpet (tiles), install carpet (tiles) before installing these items.

1.9 WARRANTY

- A. Special Warranty for Carpet (Tiles): Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 2. Failures include, but are not limited to, the following:
 - a. More than 10 percent edge raveling, snags, and runs.
 - b. Dimensional instability.
 - c. Excess static discharge.
 - d. Loss of tuft-bind strength.
 - e. Loss of face fiber.
 - f. Delamination.
 3. Warranty Period: 10 years from date of Substantial Completion.
- B. Special Warranty for Carpet Cushion: Manufacturer agrees to repair or replace components of carpet cushion installation that fail in materials or workmanship within specified warranty period.
1. Warranty includes removal and replacement of carpet and accessories required by replacement of carpet cushion.
 2. Warranty does not include deterioration or failure of carpet cushion due to unusual traffic, failure of substrate, vandalism, or abuse.
 3. Failure includes, but is not limited to, permanent indentation or compression.
 4. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Tandus; a Tarkett company.
 2. Or approved equal per Section 01 25 00 "Substitution Procedures."
- B. Color: As indicated on Drawing.

2.2 CARPET

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Tandus; a Tarkett company.
 2. Or approved equal per Section 01 25 00 "Substitution Procedures."

- B. Color: As indicated on drawing.
- C. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- D. Secondary Backing: Manufacturer's standard material.
- E. Roll Width: 6 foot or 12 foot.

2.3 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.
- C. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.
- D. Transition Strips: As indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.
- B. Examine carpet (tile) for type, color, pattern, and potential defects.
- C. Concrete Slabs: Verify that finishes comply with manufacturer's requirements and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
 - 1. Moisture Testing: Perform tests so that each test area does not exceed manufacturer's requirements. Perform moisture testing per manufacturer's specifications.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI's "Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet (tile) manufacturer's written installation instructions for the following:
 - 1. Direct-glue-down installation.
 - 2. Double-glue-down installation.
 - 3. Carpet with attached-cushion installation.
- B. Carpet Tile Installation Method:
 - 1. Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.
- D. Maintain dye-lot integrity. Do not mix dye lots in same area.
- E. Maintain pile-direction patterns indicated on Drawings.
- F. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- G. Extend carpet (tile) into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- I. Install pattern as indicated on Drawings or as approved by Architect.
- J. Do not bridge building expansion joints with carpet.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet (tile):

1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet (tile) manufacturer.
 2. Remove yarns that protrude from carpet (tile) surface.
 3. Vacuum carpet (tile) using commercial machine with face-beater element.
- B. Protect installed carpet (tile) to comply with CRI's "Carpet Installation Standard," Section 20, "Protecting Indoor Installations."
- C. Protect carpet (tile) against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 09 68 00

SECTION 09 91 23
INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.

1.3 DEFINITIONS

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 - 2. Indicate VOC content.

- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Apply coats on Samples in steps to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 1. Dunn-Edwards Corporation.
 2. Kelly-Moore Paint Company Inc.
 3. Sherwin-Williams Company (The).
 4. Or approved equal per Section 01 25 00 "Substitution Procedures."
- B. Products: Subject to compliance with requirements, provide products listed in the Finish Schedule, on the drawings, for the paint category indicated.

2.2 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Colors: As indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Fiber-Cement Board: 12 percent.
 - 3. Masonry (Clay and CMUs): 12 percent.
 - 4. Wood: 15 percent.
 - 5. Gypsum Board: 12 percent.
 - 6. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
- F. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- G. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" and "MPI Maintenance Repainting Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- E. Aluminum Substrates: Remove loose surface oxidation.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:

1. Institutional Low-Odor/VOC Latex System:

- a. Prime Coat: Primer sealer, interior, institutional low odor/VOC.
- b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
- c. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5).

2. High-Performance Architectural Latex System:

- a. Prime Coat: Primer, alkali resistant, water based.
- b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
- c. Topcoat: Latex, interior, high performance architectural, semi-gloss (MPI Gloss Level 5).

B. Galvanized-Metal Substrates:

1. Institutional Low-Odor/VOC Latex System:

- a. Prime Coat: Primer, galvanized, water based.
- b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
- c. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5).

C. Gypsum Board and Plaster Substrates:

1. Institutional Low-Odor/VOC Latex System:

- a. Prime Coat: Primer sealer, interior, institutional low odor/VOC.
- b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
- c. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5).

2. High-Performance Architectural Latex System (Use in public corridors):

- a. Prime Coat: Primer sealer, latex, interior.
- b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
- c. Topcoat: Latex, interior, high performance architectural, semi-gloss (MPI Gloss Level 5) or match existing.

END OF SECTION 09 91 23

SECTION 10 14 23

PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Panel signs.
 - 2. Tactile panel signs.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 COORDINATION

- A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.5 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For panel signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Panel Signs: Full-size Sample.
2. Variable Component Materials: Full-size Sample of each base material, character (letter, number, and graphic element) in each exposed color and finish not included in Samples above.
3. Exposed Accessories: Full-size Sample of each accessory type.
4. Full-size Samples, if approved, will be returned to Contractor for use in Project.

D. Product Schedule: For panel signs. Use same designations indicated on Drawings or specified.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Variable Component Materials: (5) replaceable text inserts and interchangeable characters (letters, numbers, and graphic elements) of each type of interchangeable panel components.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Coordinate locations of backing plates prior to installation of wall finish material. If backing plates are not located properly, Contractor shall relocate the backing plates at no additional expense to the Owner.
- C. Installation of anchored signs may only commence when anchoring requirements (backing plates) have been met.

1.9 FIELD CONDITIONS

A. Field Measurements: Verify locations of anchorage devices or backing plates embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.10 WARRANTY

- A. Special Warranty: Owner and Manufacturer to agree to warranty period and conditions. Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image.
 - c. Separation or delamination of sheet materials and components.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the 2019 CBC, Chapter 11B, Division 7: "Communication Elements and Features."

2.2 PANEL SIGNS

- A. Panel Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; As indicated on Signage Drawings.
- B. Tactile Panel Sign: Sign with smooth, non-glare, uniform surfaces; with message and characters having uniform faces and raised Braille, sharp corners, and precisely formed lines and profiles; As indicated on Signage Drawings.
 - 1. Photopolymer sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.

2.3 MATERIALS

- A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- C. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

- D. Polycarbonate Sheet: ASTM C 1349, Appendix X1, Type II (coated, mar-resistant, UV-stabilized polycarbonate), with coating on both sides.
- E. Photopolymer Sheet: 0.032 inch (0.8 mm) thick moisture resistant, non-glare interior nylon photopolymer on ultraviolet resistant PETG sign base, single piece construction. Laminated photopolymers, added-on characters, and engraved characters are not acceptable.
 - 1. Manufacturer: Novacryl PT series Polymer, or equal.
- F. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following unless otherwise indicated:
 - 1. Use concealed fasteners and anchors unless indicated to be exposed.
 - 2. Exposed Metal-Fastener Components, General:
 - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
 - b. Fastener Heads: For nonstructural connections, use flathead screws and bolts with tamper-resistant slots unless otherwise indicated.
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides, or tape recommended by manufacturer.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 - 4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.

5. Internally brace signs for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
 6. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
- B. Subsurface-Applied Graphics: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges.
- C. Shop- and Subsurface-Applied Vinyl: Align vinyl film in final position and apply to surface. Firmly press film from the middle outward to obtain good bond without blisters or fishmouths.
- D. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:
1. For snap-in changeable inserts beneath removable face sheet, furnish one suction or other device to assist in removing face sheet. Furnish initial changeable insert. Furnish two blank inserts for each sign for Owner's use.
 2. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Furnish two blank inserts for each sign for Owner's use.
 3. For frame to hold changeable sign panel, fabricate frame without burrs or constrictions that inhibit function. Furnish initial sign panel. Subsequent changeable sign panels are by Owner.
- E. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.

2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.7 ALUMINUM FINISHES

- A. Color Anodic Finish: AAMA 611, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
- C. Verify that anchorage devices embedded in permanent construction are correctly sized and located to accommodate signs.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the Drawings.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessible Signage: Install in locations on walls as indicated on Drawings.
- C. Mounting Methods:
 - 1. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
 - 2. Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position so that signage is correctly located and aligned.
 - 3. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.
- D. Field-Applied, Vinyl-Character Signs: Clean and dry substrate. Align sign characters in final position before removing release liner. Remove release liner in stages, and apply and firmly press characters into final position. Press from the middle outward to obtain good bond without blisters or fishmouths. Remove carrier film without disturbing applied vinyl film.
- E. Signs Mounted on Glass: Provide opaque sheet matching sign material and finish onto opposite side of glass to conceal back of sign.

3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 14 23

SECTION 10 21 13.19

PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid plastic toilet compartments including the following: (ARIA)
 - 1. Floor & wall mounted toilet compartments.
 - 2. Floor mounted privacy screens.

1.2 RELATED WORK

- A. Suicide Prevention shower doors, hinges, gasket (Norva Plastic, Inc) – Manufacturer: located 3911 Killiam Ave., Norfolk, VA 23508. Phone: 757-622-9281
- B. Toilet Partitions (ARIA full height Partitions, Scranton Products) – Manufacturer located: 801 E. Corey Street, PA 18505, Phone 800-445-5148

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM A 666 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - 2. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 3. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. National Fire Protection Association (NFPA):
 - 1. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.4 SUBMITTALS

- A. Submit under provisions of Division 01, General Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Include coordinated dimensions for equipment and furnishings specified in other Sections.
- D. Verification Samples: For each finish product specified, two samples, representing actual product, color, and finish.

- E. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment, cleaning and maintenance.

1.5 QUALITY ASSURANCE

- A. Installer: Five years or more experience with installation of similar products, and acceptable to the manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in the manufacturer's unopened packaging until ready for installation.
- B. Protect finished surfaces from soiling or damage during handling and installation.

1.7 COORDINATION AND SCHEDULING

- A. Schedule delivery of access flooring so that spaces are sufficiently complete and access flooring materials can be installed immediately following delivery.

1.8 PROJECT CONDITIONS

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

1.9 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard 25 year limited warranty for against breakage, corrosion, and delamination under normal conditions.

PART 2 PRODUCTS

2.1 General: All products and systems shall be ligature resistant.

2.2 MANUFACTURER

- A. Acceptable Manufacturer: Scranton Products, which is located at: 801 E. Corey St. ; Scranton, PA 18507; ASD Toll Free Tel: 800-445-5148; Email: [request info \(info@scrantonproducts.com\)](mailto:requestinfo@scrantonproducts.com); Web: www.scrantonproducts.com.
- B. Acceptable Manufacturer: Norva Plastics, Inc. located at 3911 Killiam Ave., Norfolk, VA 23508. Phone: 757-622-9281
- C. Approved equal per Section 01 25 00 "Substitution Procedure."

2.3 MATERIALS

- A. Panels and Pilasters:
 - 1. High density polyethylene (HDPE), fabricated from polymer resins compounded under high pressure, forming single thickness panel.
 - 2. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by

pens, pencils, markers, and other writing instruments.

3. Thickness: 1 inch (25 mm) with 1/4 inch (6 mm) radiused edges. One edge of pilaster and transom panels to be ship lapped.
- B. Aluminum and Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.
- C. Stainless Steel: ASTM A167, Type 304.

2.4 TOILET COMPARTMENT SYSTEM

- A. Basis of Design: ARIA Toilet Partitions as manufactured by and supplied by Scranton Products.
- B. System Construction:
1. System Specified Height: As indicated on Drawings.
 2. Shower Doors: By Norva Plastic Inc.
 3. Toilet Partition Doors: Aria Partitions by Scranton Products
 4. Doors: As indicated on Drawings. Mounted 1 inch (305 mm) above finished floor.
 5. Dividing Panels: Two panels stacked and secured with 3 dowels ensuring proper alignment totaling the system specified height
 - a. Trim: Application to hide seam gap between dividing panels.
 6. Pilasters: System specified height, shoeless system secured with 3/4 inch (19 mm) long stainless steel tamper resistant Torx head screws and angled wall brackets.
 7. Transom Panel: Height required to accommodate specified system height with ship lap on one edge. Mounted with four mending plates using 3/4 inch (19 mm) long stainless steel tamper resistant Torx head screws.
 8. Wall Brackets: (41 inches) (54 inches) (82 inches) long, heavy-duty aluminum. Mounts to pilasters, panels and walls with 3/4 inch (19 mm) long stainless steel tamper resistant Torx head screws.
- C. System Design:
1. Color: As determined by the Architect from Manufacturer's selection.
 2. Trim: Standard radius edged, 5 inches (127 mm) wide.
 3. Trim: As determined by the Architect from Manufacturer's selection.
 4. Trim Color: As determined by the Architect from Manufacturer's selection.

2.5 HARDWARE:

- A. Hinges: Helix style 78 inches (1981 mm) edge mounted continuous hinge.
1. Stainless steel: 0.09 inch (1.88 mm) thick 304-2B stainless steel using a stainless-steel pin in 0.25 inch (5.94 mm) diameter.
 2. Closing degree is minus 5 degrees. Hinge is designed to come to a full close on its own weight.
- B. Occupancy Indicator Latch and Housing: Satin stainless-steel showing green and red occupancy indicators.
1. Latch housing: Satin stainless steel.
 2. Slide bolt and button: Satin stainless steel.
 3. Door Pulls: Satin stainless steel.

- C. Coat Hook and Bumper:
 - 1. Combination type, chrome plated Zamak.
 - 2. Equip outswing handicapped doors with second door pull and door stop.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas receiving toilet partitions, panels and pilasters for correct height and spacing of anchorage, blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the Architect.
- B. Do not begin installation until substrates have been properly prepared.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install partitions rigid, straight, plumb, and level manor, with items laid out as shown on shop drawings.
- C. Clearance at vertical edges of doors shall be uniform top to bottom.
- D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- E. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.4 PROTECTION

- A. Take protective measures to prevent exposure to other construction activity.
- B. Protect installed products until completion of project.

3.5 CLEANING

- A. Clean surfaces to remove soiling, stains, dust, and dirt using materials acceptable to manufacturer.
- B. Touch-up, repair or replace damaged products and defective work, as directed by Architect.

- C. Leave installation area clean, free of residue and debris resulting from work of this Section.

END OF SECTION 10 21 13.19

SECTION 10 26 00

WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wall guards.
 - 2. Impact-resistant handrails.
 - 3. Corner guards.
 - 4. Abuse-resistant wall coverings.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes.
 - 2. Include fire ratings of units recessed in fire-rated walls and listings for door-protection items attached to fire-rated doors.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.
 - 1. Include recommended methods and frequency of maintenance for maintaining best condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Bed-Locator Covers: Full-size plastic covers equal to 2 percent of each type, color, and texture of cover installed, but no fewer than two units.
 - 2. Mounting and Accessory Components: Amounts proportional to the quantities of extra materials. Package mounting and accessory components with each extra material.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store wall and door protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
 - 1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
 - 2. Keep plastic materials out of direct sunlight.
 - 3. Store plastic wall- and door-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.
 - a. Store corner-guard covers in a vertical position.
 - b. Store wall-guard bed-locator and handrail covers in a horizontal position.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-protection units that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including detachment of components from each other or from the substrates, delamination, and permanent deformation beyond normal use.
 - b. Deterioration of metals, metal finishes, plastics, and other materials beyond normal use.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain wall- and door-protection products of each type from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Surface Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.
- B. Regulatory Requirements: Comply with CBC 2016 ADA Standards for Accessible Design and other applicable regulatory requirements specified in Section 01080.

2.3 WALL GUARDS

- A. Crash Rail: Heavy-duty assembly consisting of continuous snap-on plastic cover installed over concealed retainer; designed to withstand impacts.
 - 1. Manufacturer: Construction Specialties, Inc.
 - 2. Cover: Extruded rigid plastic, minimum 0.100-inch wall thickness; in dimensions and profiles indicated on Drawings.
 - a. Surface: Uniform.
 - b. Color and Texture: As selected by Architect from manufacturer's full range.
 - 3. Bumper: Continuous, resilient bumper cushion(s).
 - 4. End Caps and Corners: Prefabricated, injection-molded plastic; matching color cover; field adjustable for close alignment with snap-on cover.
 - 5. Accessories: Concealed splices and mounting hardware.
 - 6. Mounting Type and Accessories: As indicated on Drawings.

2.4 IMPACT-RESISTANT HANDRAILS

- A. Structural Performance: Handrails, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Uniform load of 50 lbf/ft. applied in any direction.
 - 2. Concentrated load of 200 lbf applied in any direction.
 - 3. Uniform and concentrated loads need not be assumed to act concurrently.

- B. Plastic, Impact-Resistant Handrails: Manufacturer's standard assembly consisting of snap-on plastic cover installed over continuous retainer.
 - 1. Cover: Extruded rigid plastic; in dimensions and profiles indicated on Drawings.
 - a. Single Handrail with Bumper-Rail Profile: One tube mounted above nominal, flat-faced bumper rail; supported by concealed, continuous retainer and extended mounting brackets.
 - 1) Bumper-Rail Dimensions: As indicated on Drawings.
 - 2) Bumper Surface: Smooth.
 - 3) Color and Texture: As selected by Architect from manufacturer's full range.
 - 2. End Caps and Corners: Prefabricated, injection-molded plastic; matching color cover; field adjustable for close alignment with snap-on cover.
 - 3. Accessories: Concealed splices, cushions, and mounting hardware.
 - 4. Mounting Type: Extended mounting on injection-molded plastic mounting brackets, or as indicated on Drawings.

2.5 CORNER GUARDS

- A. Surface-Mounted, Metal Corner Guards: Fabricated as one piece from formed or extruded metal with formed edges; with 90- or 135-degree turn to match wall condition.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Babcock-Davis.
 - b. Construction Specialties, Inc.
 - c. Korogard Wall Protection Systems; a division of RJF International Corporation.
 - d. Or approved equal.
 - 2. Material: Stainless-steel sheet, Type 304.
 - a. Thickness: Minimum 0.0625 inch.
 - b. Finish: Verify existing corner guard finish.
 - 3. Wing Size: Nominal 1-1/2 by 1-1/2 inches.
 - 4. Corner Radius: 1/8 inch.
 - 5. Mounting: Adhesive.

2.6 ABUSE-RESISTANT WALL COVERINGS

- A. Abuse-Resistant Sheet Wall Covering: Fabricated from semirigid, plastic sheet wall-covering material.

1. Manufacturer: As indicated on Drawings.
2. Size: As indicated on Drawings.
3. Sheet Thickness: 0.060 inch.
4. Color and Texture: As selected by Architect from manufacturer's full range.
5. Height: As indicated on Drawings.
6. Trim and Joint Moldings: As indicated on Drawings.
7. Mounting: Adhesive.

2.7 PLASTIC DOOR-PROTECTION PLATES

A. General: Manufacturer's standard plastic products of thicknesses and sizes indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Construction Specialties, Inc.
 - b. Korogard Wall Protection Systems; a division of RJF International Corporation.
 - c. Pawling Corporation.
 - d. Or approved equal.
2. Fire-Rated Doors: Where the tops of door-protection plates indicated for field installation on fire-rated doors are more than 16 inches above the door bottoms, provide door-protection plates complying with NFPA 80 that are listed and labeled by a qualified testing and inspection agency acceptable to authorities having jurisdiction.

2.8 MATERIALS

- A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required, thickness as indicated.
- B. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- C. Adhesive: As recommended by protection product manufacturer.

2.9 FABRICATION

- A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.
- B. Factory Assembly: Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.

- C. Quality: Fabricate components with uniformly tight seams and joints and with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

2.10 FINISHES

- A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of the Work.
- B. Examine walls to which wall and door protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
 - 1. For wall and door protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Complete finishing operations, including painting, before installing wall and door protection.
- B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

- A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

- B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.
- C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
 - 1. Provide anchoring devices and suitable locations to withstand imposed loads.
 - 2. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches apart.
 - 3. Adjust end caps as required to ensure tight seams.
- D. Abuse-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.
- E. Fire Doors: Install protection according to the listing of each item.

3.4 CLEANING

- A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.
- B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 10 26 00

SECTION 10 28 00

TOILET, BATH, AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Patient-use ligature resistant bathroom accessories.

1.3 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's product data for products specified, indicating selected options and accessories.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.
 - 2. Identify accessories using designations indicated.

1.5 WARRANTY

- A. Manufacturer's standard warranty against defects in product workmanship and materials.

PART 2 - PRODUCTS

2.1 BATHROOM ACCESSORIES

- A. Source Limitations: Obtain public-use bathroom accessories from single source from single manufacturer.
- B. Products as indicated on Drawings, or approved equal per Section 01 25 00 "Substitution Procedures."
- C. All toilet and shower accessories shall be ligature resistant.

2.2 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Install all accessories per mounting locations as indicated on Drawings.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 10 28 00

SECTION 21 28 00

FIRE PROTECTION SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work in this Section Includes: All labor, materials, and equipment to furnish and install complete wet sprinkler system in conformity with applicable codes and authorities having jurisdiction for the following:
 - 1. Replace existing sprinkler heads with new.
- B. Fire sprinkler work will be performed by a C-16 licensed contractor, retained under separate contract to the Owner.
- C. Related Work: Coordinate and comply with requirements of the following:
 - 1. Section 23 02 00 - Supports, Anchors, and Seismic Restraints.
 - 2. Section 22 10 00 - Plumbing Piping Systems.
- D. Requirements of Section 23 00 00 - General Mechanical Requirements, apply to all work in this Section.

1.2 REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

- A. CBC – California Building Code, 2016 edition.
- B. CCR - Title 24, California Code of Regulations.
- C. CFC – California Fire Code, 2016 edition.
- D. NFPA - National Fire Protection Association, NFPA 13, 2016 edition.
- E. OSHPD - Office of Statewide Health Planning and Development.

1.3 QUALITY ASSURANCE

- A. Qualifications of Installer: Fire protection work shall be performed by a C-16 contractor licensed in the state of California to install, test, and maintain fire protection systems.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Materials: All material and equipment shall be the latest design of the manufacturer and shall be listed by (a) State Fire Marshal, (b) Underwriters Laboratories (UL) latest list of Inspected Fire Protection Equipment and Materials, and (c) Factory Mutual (FM) Laboratories latest list of Approved Equipment, Fire Protection Devices, and Devices Involving Fire Hazard.

2.2 FIRE SPRINKLER SYSTEM PARTS AND ACCESSORIES

- A. Sprinkler Heads:
 - 1. Finished Ceiling Areas: Tyco Fire Products “Raven” TY 3281, Viking, or equal, standard coverage quick-response ligature resistant pendant sprinkler head, 1/2-inch threaded connection, 5.6 K-factor.

PART 3 - EXECUTION

3.1 FABRICATION AND INSTALLATION

- A. In accordance with Standards of the National Fire Protection Association, CBC Chapter 9, NFPA 13-2016, and requirements of OSHPD.

3.2 GENERAL REQUIREMENTS FOR PIPING

- A. Connect to existing sprinkler piping where noted on the Drawings.
- B. Joints:
 - 1. Make joints of threaded pipe by cutting pipe square and reaming inside. Threads shall be cut so that exposed threads shall not exceed three. Exposed threads shall be coated with corrosion inhibitive paint. Use joint compound sparingly.
- C. Cutting, Notching, and Patching:
 - 1. Provide all cutting and notching required for work of this Section. Obtain Owner’s Representative’s approval before cutting structural elements.
 - 2. Provide all patching required for work of this Section. Patch to match adjacent work and to Owner’s Representative’s satisfaction.
- D. Sprinkler Heads:
 - 1. Provide temperature ratings in accordance with NFPA 13, 8.3.2 and as noted on the Drawings.
 - 2. Install sprinkler heads as recommended by manufacturer. Sprinklers shall be set level.

3.3 FIELD QUALITY CONTROLS

- A. Test automatic sprinkler piping in accordance with NFPA 13, Section 16.2. Upon completion and prior to acceptance of the installation, subject the system to required acceptance tests, including a hydrostatic pressure test of two (2) hours duration with no detectable leakage. Prior to testing, piping shall be purged of all air. Remove and replace all defects identified during this test and retest after corrections have been made.
 - 1. Provide minimum 72-hour notification prior to any test to OSHPD, Inspector of Record, and the Owner's Representative. Schedule tests at times acceptable to above agencies and representatives.
- B. Upon completion of inspections and tests, a "Contractor's Material and Test Certificate" shall be completed and signed by the Contractor and any witnesses to the tests. Submit the original of the completed certificate to the Owner's Representative prior to acceptance of the system.

END OF SECTION 21 28 00

SECTION 22 10 00

PLUMBING PIPING SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work in this Section Includes: All labor, materials, and equipment to furnish, install, test, and commission complete working systems in conformity with applicable codes and authorities having jurisdiction for the following:
 - 1. Domestic water system piping.
 - 2. Sanitary waste and vent system piping.
 - 3. Fire sprinkler system piping.

- B. Related Work: Coordinate and comply with requirements of the following:
 - 1. Materials, equipment, and methods specified herein are common to various Sections of Division 21 and 22, and are applicable to all related work.
 - 2. Section 230200 - Supports, Anchors, and Seismic Restraints, contains additional requirements for pipe hangers and supports.
 - 3. Section 230300 - Insulation, contains additional requirements for insulation.
 - 4. Section 221900 - Plumbing Fixtures, contains additional requirements for plumbing piping systems.
 - 5. Section 212800 - Fire Protection System, contains additional requirements for fire sprinkler piping systems.
 - 6. Where items specified in other Sections of Division 21, 22, 23, or shown on the Drawings conflict with requirements of this Section, the more stringent requirements shall take precedence.

1.2 REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

- A. In accordance with Section 230000 - General Mechanical Requirements.

1.3 QUALITY ASSURANCE

- A. In accordance with Section 230000 - General Mechanical Requirements.

- B. Provide piping with each length marked with manufacturer's name or trademark and type of pipe. Each shipping unit shall be marked with purchase order number, metal or alloy designation, temper, size, and supplier's name.

- C. Installed material not meeting specification requirements shall be replaced with material that meets these specifications without additional cost to the Owner.

1.4 SUBMITTALS

- A. Submit product data, shop drawings, and samples in accordance with Section 230000 - General Mechanical Requirements, Part 1.
 - 1. Submit complete information for the following:
 - a. Piping and fittings for each service.
 - b. Piping connectors.
 - c. Piping specialties.
 - d. Water system specialties.
 - e. Drainage system specialties.
 - f. Signs, labels, and identification for piping and valves (Section 230000-3.3).
 - g. Pipe hangers and supports (Section 230200-2.2).
 - h. Attachments to structure (Section 230200-2.6).
 - i. Miscellaneous Metal and Hardware (Section 230200-2.7).
 - j. Fiberglass pipe insulation materials, including project specific application procedure (Section 230300-2.2).
- B. Product Options and Substitutions: In accordance with Section 230000 - General Mechanical Requirements, Part 2.
- C. Submit test reports and certifications in accordance with Section 230000 - General Mechanical Requirements, Part 3.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Furnish all pipe free of dirt, oil and debris, with plastic end-caps/plugs on each end of pipe. Maintain end-caps/plugs throughout shipping, storage and handling to prevent pipe-end damage and eliminate dirt and construction debris from accumulating inside of pipe.
- B. Where possible, store all materials inside and protect from weather. Where necessary to store outside, elevate well above grade and enclose with durable, waterproof wrapping.
- C. Maintain all carbon steel piping free of rust and scale.

PART 2 - PRODUCTS

2.1 PIPING AND FITTINGS

- A. General:
 - 1. Piping shall be commercially round and straight, free from all defects, rust and scale, and be identified as to type, schedule, size, and manufacturing standards.
 - 2. Pressure ratings herein are steam working pressure (SWP), unless specifically noted as "WOG" or "Water Working Pressure."

3. Unless otherwise noted, steel piping two (2) inches and smaller shall have threaded ends and fittings, and steel piping 2-1/2 inches and larger shall be welded with flanged valves and connections.
 - a. Pipe threads shall conform to ANSI B2.1.
4. Elbows and tee fittings shall be full flow, long radius type. Cut-in or mitered elbows or tees are prohibited. Short radius elbows only allowed where necessary for the installation; specifically note short radius elbows on shop drawings. Reducers shall be tapered and concentric or eccentric as specified hereinafter.
5. Provide new materials meeting the latest revision of listed ASTM specifications as listed in this specification.
6. Unless otherwise indicated, fittings and accessories connected to pipe shall be of the same material as the pipe.

B. Piping Services:

1. Domestic Water, 2 Inches and Smaller:
 - a. Pipe: Copper tube, Type K or L, hard drawn, ASTM B88.
 - 1) Use Type K, soft (annealed) temper, for underground piping with brazed joints and wrought copper fittings.
 - b. Fittings:
 - 1) Cast bronze, solder joint, pressure rated, ANSI B16.18.
 - 2) Wrought copper, solder joint, pressure rated, ANSI B16.22.
 - c. Joints: Provide lead-free soldered or brazed joints as specified in Parts 2 and 3.
 - d. Nipples: ANSI H27.1/ASTM B34 standard weight seamless 85% copper/15% zinc red brass pipe, ANSI B16.15 class 125 threaded, 3-inches minimum length.
2. Soil, Waste, and Vent, 1-1/2 Inches and Larger:
 - a. Pipe: Hubless cast iron pipe, service weight, ASTM A-888, CISPI 301; Tyler, California/Alhambra, or equal.
 - b. Fittings: Hubless cast iron fittings, service weight, ASTM A-888, same manufacturer as pipe.
 - c. Joints: Heavyweight 4-band type: No-hub couplings with four 0.060" thick stainless steel and neoprene tightening clamps; Husky Series 4000, Mission Heavyweight, or equal.

- d. Provide Fernco Proflex 3000 Series Shielded Couplings, or equal, for connecting to existing dissimilar piping. Coupling shall include a one-piece rubber gasket, removable rubber bushings, and be wrapped with an extra-wide stainless steel sleeve, clamped tight with two (2) stainless steel bolts. Coupling shall be specifically designed for the pipe material being joined.

3. Fire Sprinkler Piping: See Section 212800 - Fire Protection System, for additional requirements.

2.2 PIPING CONNECTORS

- A. Threaded Joints: Paste type for brush application or cord type. Products shall be non-toxic, chemically inert, non-hardening rated for -50°F to +500°F, bearing UL, AGA, UPC, and NSF approvals. Rector T-Plus 2, Rector No. 5, Loctite, or equal. Apply Teflon tape to male pipe threads prior to paste.

- B. Solder:

1. Solder: Wolverine "Silvabrite 100", J. W. Harris "Bridgit", or equal, lead-free silver-bearing solder. For 2-1/2" and larger sizes, use silver brazing alloy.
2. Brazing Alloy:

- a. Silver: Minimum 15 percent silver with copper and zinc, maximum five (5) percent phosphorous (BCuP-5), Bellman-Melcor "Silvaloy 15", J.W. Harris "Stay-Silv 15", or equal. Solder shall start melting above 1000 degrees Fahrenheit, and be free flowing at 1300 degrees Fahrenheit or below. No cadmium permitted.

- C. Copper Unions For 2" and Smaller Pipes: ASTM B62, ANSI B16.15, ground joint, cast bronze with threaded ends. Anaconda No. 1633, Mueller "Streamline" Brass No. WC-405, or equal.

1. Refer to Section 212800 - Fire Protection System, for fire sprinkler piping requirements.

- D. Dielectric Couplings:

1. Commercial dielectric couplings or unions not allowed.
2. For connections of ferrous piping to copper piping, provide Schedule 40 red brass nipples, minimum length six (6) times pipe diameter; two (2)-inch and smaller with threaded ends; 2-1/2 inches and larger with flanged connections.

2.3 PIPING SPECIALTIES

- A. Escutcheons: Polished chrome plated brass or stainless steel. For 3/8-inch and 1/2-inch sizes, provide Speedway Series 600, American Standard, Grinnell, or equal. For larger sizes, provide Beacor Series 1500, Grinnell Figure 2 (for copper tubing), Grinnell Figure 13 (for steel pipe), or equal. Provide white painted escutcheons where pipes penetrate acoustic tile ceilings.
- B. Sleeves and Packings:
 - 1. For Framed Wall Construction: Minimum 20-gauge galvanized sheet metal sleeve rigidly attached to wall framing, unless otherwise noted on the Drawings.
- C. Fire-Rated Packings: As detailed on the Drawings and as specified hereafter.
 - 1. Provide complete systems, including materials and installation details strictly in accordance with the UL Fire Resistance Directory, "Through Penetration Fire-Stop Systems," and which have been approved by OSHPD the California State Fire Marshal.
 - 2. Comply with requirements of Division 07 – Thermal and Moisture Protection.
 - 3. Submit details of each system to be used as part of this work.

2.4 WATER SYSTEM SPECIALTIES

- A. Water Hammer Arresters (Shock Absorbers, Shockstops):
 - 1. For Use at Flush Valves: J.R. Smith Hydrotrol 5000 Series, Precision Plumbing Products (PPP) SS Series, Zurn, or equal, all stainless-steel construction, with welded nesting bellows, pressurized compression chamber, nontoxic mineral oil surrounding bellows, and threaded nipple connection. If a specific size is not called out on the Drawings, size in accordance with Plumbing and Drainage Institute (PDI) Standards; submit with sizing calculations.
 - 2. For Use at Individual Sinks and Fast Closing Valves, 3/4-inch and Smaller: PPP Model SC-500, Sioux Chief Model 652-A Hydra-Rester, or equal with threaded connection.

2.5 DRAINAGE SYSTEM SPECIALTIES

- A. Floor Drains: As scheduled on Drawing P0.1.
- B. Traps: Same material as pipe or fittings unless specified with fixtures. Refer to Section 221900 - Plumbing Fixtures.

2.6 VALVES

- A. 2-1/2 Inches and Smaller: Full port ball valves, bronze body with threaded ends, Type 316 stainless steel ball and stem, reinforced TFE seat rings and packing, blowout-proof stem, rated for 400 psi CWP, MSS SP-110 conformance, plastic covered steel lever handles. Nibco T-585-66-LF, Apollo, Watts, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:

1. See Section 230000 - General Mechanical Requirements, for general installation requirements, including manufacturer's instructions, access to valves and equipment, connection to existing utilities, existing system shutdown, and coordination with existing conditions and other trades.
2. Definition of "Piping": The term "piping" as used in the Contract Documents shall mean all pipe, fittings, nipples, valves, unions, connections, joints, vents, drains, supports, braces, etc., as may be required for a complete and functional system.
3. Install pipe and fittings in accordance with requirements herein, reference standards, manufacturer's recommendations and recognized industry practices.
4. During construction, keep openings in piping closed with plugs or caps to prevent entrance of foreign matter. Clean pipes, fittings, valves, and specialties prior to connecting to system. Clean and flush drainage systems after successful pressure testing.
5. Before actuation of gas systems, flush system with dry nitrogen until system is clean and free of oil and construction debris.

- B. Wherever alteration work results in removal of piping or water outlets, no dead-end branches shall be left in the system. All dead-end lines shall be cut back, valved, and capped within six (6) inches of a live main.

- C. Arrangement:

1. Install piping generally as shown on the Drawings. Do not scale Drawings for exact location of piping. Prepare detailed shop drawings showing actual routings and dimensions with additional offsets wherever necessary to suit field conditions and coordinate the work.
2. Where size for a pipe segment is not indicated, the pipe segment size shall be equal to the largest pipe segment to which it is connected. Transition to smaller size shall occur on the side of fitting where smaller size is indicated.
3. Piping systems shall be continuous. Terminate branch run-outs at individual or groups of fixtures so that no dead-end branches occur and all fixtures are connected to required utilities. Connect to all fixtures and equipment shown on the Drawings.
4. Install valves, instrumentation, and other devices in piping systems in easily accessible locations.

5. Make all required plumbing connections (drain, water, air, gas, etc.) to equipment, fixtures and systems specified under other Sections and Divisions, and to new or existing Owner furnished equipment and systems. Coordinate rough-in sizes and elevations prior to installation.
6. Install piping true to line and grade, free from traps and air pockets. Arrange piping neatly in horizontal or vertical groups parallel to building walls, and maintain required slopes. Install vertical piping plumb. Finished work shall present a neat and craftsperson-like appearance.
7. Install piping concealed above ceilings, within equipment enclosures, or in walls unless otherwise noted. Submit shop drawing details of all exposed piping prior to installation.
8. Accurately cut pipe and work into place without springing or forcing, except when cold springing is required.
9. Piping within partitions or penetrating plates, studs, beams, or walls shall have sufficient clearance from other work to allow for expansion or contraction of piping. Bare piping shall not be in contact with wood, concrete, metal, ceiling supports, or other work at any time.
10. Take special care to eliminate contact between bare piping and metal surfaces such as conduits, tie wires, wall studs, etc., which may be sources of stray current corrosion. Secure piping at stud and header penetrations using Acousto-Plumb Series 6100, 6200, and 6300 isolators, or equal. At close crossings of pipes and conduits, metal straps or tie wires, wrap pipes and conduits with two wraps of minimum 10 mil PVC tape, PlumBest, or equal.
11. Do not install piping above electrical equipment or panels, or in other locations prohibited by Code, including the required service space for this equipment. Scaled dimensions on the Drawings shall not relieve the Contractor of this requirement.
12. Bull-head tee connections in either mixing or diverging flow are prohibited.
13. Furnish reducers wherever necessary when equipment connections do not match line sizes shown on the Drawings.
14. Do not sleeve through structural members without consent of the Owner's Representative.

D. Sloping, Venting, and Draining:

1. Continuously grade horizontal drain and waste lines with minimum of 1/4" per foot, except piping 4" diameter or larger which may be run at 1/8" per foot slope with approval of the local authority having jurisdiction. Make changes in direction by use of drainage pattern fittings.
2. Grade vent pipe for complete drainage by gravity to soil or waste pipes. Vent terminations shall be set true and level.

3.2 JOINTING

A. Fittings:

1. Provide standard manufactured fittings in all cases. Field fabricated fittings, mitered ells, welded branch connections, notched tees, stepped bushings, orange peel reducers, drilled-in tee fittings, and clamp-on branch connections are prohibited. Reducing bushings may only be used for instrument connections.
 2. Make changes in size using tapered reducing fittings, concentric or eccentric as required.
 3. Provide dielectric couplings at all connections of ferrous piping to nonferrous piping.
 4. Make branch take-offs with reducing tees or line size tees and reducers.
 5. Provide necessary transition fittings and couplings when changing from one pipe material to a dissimilar material.
- B. Unions: Not all unions are shown on the Drawings. Whether shown on the Drawings or not, provide unions immediately adjacent to coil connections.
1. Make sure that ground joint surfaces are free of scratches. Ensure that solder droplets do not contact mating surfaces. Spray mating surfaces with silicone lubricant to enhance seating. Apply manufacturer's recommended torque for each size of union.
 2. Unions are not allowed in medical gas and fire sprinkler piping systems.
- C. Pipe Ends: Perform pipe cutting and end preparation to result in clean ends with full inside diameter. Ream pipe ends to remove burrs and tool marks. Clean all pipe ends and inside of piping before jointing.
- D. Nipples: Except where space is limited, use minimum 3-inch long nipples. Close nipples (with less than 1 inch of unthreaded pipe) are prohibited. Where connecting specialties in copper piping and plumbing fixtures, use brass nipples.
- E. Threaded Joints: Pipe threads shall be tapered in accordance with ANSI B31.9 and ANSI B2.1 for IPS threaded pipe. Cut threads so that no more than 3 threads remain exposed after joint is made. Ream pipe ends after cutting and clean before erection. Seal joints with approved sealant compound applied to male threads only. Apply Teflon tape to male threads prior to paste. Remove any excess pipe joint compound. Do not make screwed joints with rope or other packing. When joining plated, polished, or soft metal piping, use friction wrenches exclusively.
- F. Brazed and Soldered Joints:
1. In accordance with ANSI/ASME B31.9, Building Services Piping. Preparation, techniques, and procedures in accordance with the Copper Tube Handbook, as published by the Copper Development Association.

2. Remove slivers and burrs remaining from cutting operation by reaming and filling both pipe surfaces. Clean fitting and tube with metal brush, emery cloth or sandpaper. Remove residue from cleaning operation, apply approved, non-acidic flux and assemble joint to socket stop. Apply flame to fitting until solder melts when placed at joining. Remove flame and feed solder into joint until full penetration of cup and ring of solder appears. Wipe excess solder and flux from joint.
3. A continuous fillet, full thickness of the pipe material, shall be visible completely around the joint.
4. Crimping of copper tubing is prohibited.
5. Replace overheated or deformed joints.

G. No-Hub Cast Iron Joints:

1. Place gasket on end of one pipe or fitting and clamp assembly on end of other pipe or fitting. Firmly seat pipe or fittings ends against integrally molded shoulder inside neoprene gasket. Slide clamp assembly into position over gasket. Tighten fasteners to manufacturer's recommended torque.
2. Install cast iron pipe and fittings, hubless pattern, as recommended by CISPI in their publication "Installation Suggestions for Cast Iron No-Hub Pipe and Fittings".

H. Care of Floors: Do not set pipe vises or threading machines on unprotected floors. Cover floors to protect from staining with oil or other substances. Bear cost of removing stains to the satisfaction of the Owner.

3.3 PIPING SPECIALTIES

A. Escutcheons: Provide wherever wall, floor, or ceiling penetrations are exposed to view in any room. Size escutcheons to fit outside diameter of insulation.

B. Sleeves; Above-Ground:

1. Provide appropriate sleeves at all wall penetrations. Sleeves are not individually noted or shown on the Drawings. Coordinate and install sleeves at all penetrations in accordance with requirements herein and typical details on the Drawings.
2. Terminate sleeves flush with walls and ceilings unless otherwise noted.
3. Tightly pack annular space between pipe and sleeve with mineral fiber, except where fire-rated packing is required.

C. Fire-Stopping:

1. Properly fireproof all new and existing floor and wall penetrations by pipes, conduits, etc., through fire-rated separations in accordance with UL listing requirements. Submit appropriate details for each application encountered on this Project. Fire-stop assemblies shall meet or exceed the fire-separation rating of the floor or partition. Fire-stop materials and assemblies shall be approved by OSHPD.
2. All floor slabs shall be considered two (2)-hour rated separations, unless otherwise noted.

3.4 WATER SYSTEM SPECIALTIES

A. Water Hammer Arresters:

1. Use water hammer arresters to control water hammer. Size and locate water hammer arrestors in accordance with manufacturer's instructions and PDI Standards.
2. Provide water hammer arresters upstream of all lavatories, sinks, and quick-closing valves.

3.5 DISINFECTION OF DOMESTIC WATER PIPING

- A. Prior to utilization of domestic water systems, all affected water piping shall be sterilized using procedures prescribed in CPC 609.9 and the following.
- B. For alteration work involving branch lines of 20-foot length or less, the following procedure may be followed:
 1. Ascertain before installation that all pipe and fittings are substantially clean.
 2. Using a solution of one part "Purex," "Clorox," or equal, to ten (10) parts water, soak lengths of pipe and thoroughly swab pipe and fittings immediately prior to assembly.
 3. Immediately after assembly, cap or plug assembled piping against entry of contamination, in a manner acceptable to the Owner's Representative. Maintain this condition until final connection.
 4. Immediately after connection, flush new piping thoroughly with water.
 5. Provide bacteriological analysis specified herein.
- C. Preliminary Approval: After satisfactory completion of disinfection procedure, the Owner may issue a temporary approval for immediate use of piping system pending bacteriological analysis of water samples.
- D. Bacteriological Analysis of Water:
 1. After final flushing, water samples shall test negative for coliform aerogenes organisms.
 2. Analysis shall indicate total plate count less than 100 bacteria per cc.

- E. Final Approval: Upon satisfactory completion of analyses by independent testing agency and submittal of results and certification, final approval will be given by the Owner's Representative. If results of analyses are not satisfactory, then repeat disinfection procedures until specified standards are achieved.
- F. After final approval, drain existing piping to make connections, remove hose bibbs and connect piping to existing piping, first swab all fittings and ends of existing piping with Clorox, Purex, or equal. Flush piping while filling system until swabbing residue is washed out.

3.6 PIPING PRESSURE TESTS

A. General:

1. Provide testing for new plumbing systems in accordance with 2016 CPC, Section 105.3. Retest work that fails initial testing after corrections are made in accordance with CPC Section 105.3.2.
2. Clean and purge equipment and piping before each test.
3. Test new piping systems before connecting to existing systems. All parts of system shall be tested.
4. Work may be tested in sections, if necessary. In this case, tests of subsequent sections shall include all connections between previously tested sections and section being tested.
5. Should any piece of equipment or material fail in any test, immediately remove, repair, or replace with new and retest system.
6. Test Pressures shall be maintained for period stated, or as directed, without loss in pressure except that due to change in temperature and/or atmospheric pressure during test.
7. Should any system component not be rated for the test pressure, then temporarily replace the component with a spool piece during pressure testing. Reinstall component after testing is complete and test component at normal operating pressure.
8. Perform tests in accordance with applicable code requirements. Arrange for witnessing by Owner's Representative and authorities having jurisdiction.
9. Connections to and capping or plugging of existing piping shall be done with special care, since the joint will be tested only under normal working pressure.
10. Test all piping before insulating or concealing.

B. Test Pressures and Methods:

1. Test all soil, waste, vent, and drain piping hydrostatically to 10-foot minimum head on every joint and allow to stand for a minimum of four (4) hours. Provide separate standpipe above highest point being tested or extend system to obtain required 10 ft head of water. Head shall be maintained for at least 30 minutes before test starts.
2. Test all water piping systems hydrostatically to 150 psig; retain this pressure for a minimum of four (4) hours.

3. Test wet fire sprinkler piping hydrostatically to 200 psig; retain this pressure for a minimum of two (2) hours.
 - C. Check all valves within tested systems for tightness and operate valves at least once from open to closed to open while valve is under test pressure. Replace leaky packing with new packing of type recommended by valve manufacturer. Replace any valves that do not operate smoothly and properly.
 - D. Each test shall be documented by a report identifying the project name, system tested, notes that clarify the exact extent of the test, test medium and pressure, date, time started and initial gauge reading, time ended and final gauge reading, statement of results, Contractor's Certification Signature, and Inspector of Record's approval signature.
- 3.7 FINAL INSPECTION
- A. In accordance with Section 230000 - General Mechanical Requirements.
 - B. Upon completion of work, operate systems and equipment under normal operating conditions, and demonstrate proper operation of all system components to the satisfaction of the Owner's Representative. Correct all defects prior to Final Acceptance.

END OF SECTION 22 10 00

SECTION 22 19 00
PLUMBING FIXTURES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work in this Section Includes: All labor, materials, and equipment to furnish and install complete plumbing systems in conformity with applicable codes and authorities having jurisdiction for the following:
 - 1. New plumbing fixtures and trim.
 - 2. Removal of existing fixtures and piping.
- B. Related Work: Coordinate and comply with requirements of the following:
 - 1. Section 23 02 00 - Supports, Anchors, and Seismic Restraints.
 - 2. Section 22 10 00 - Plumbing Piping Systems.

1.2 REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

- A. In accordance with Section 23 00 00 - General Mechanical Requirements.
- B. Requirements of Regulatory Agencies: In all cases where FS, CS, ANSI, NSF, or other standards are shown, specified, or required, products shall meet or exceed the standards established for material, quality, manufacture, and performance.
- C. Reference Standards:
 - 1. ANSI - American National Standards Institute.
 - 2. ASSE - American Society of Sanitary Engineers.
 - 3. CS - Commercial Standards, Commodity Standards Division, U.S. Department of Commerce.
 - 4. FS - Federal Supply Service, Standards Division, General Services Administration.
 - 5. NSF - National Sanitation Foundation.

1.3 QUALITY ASSURANCE

- A. In accordance with Section 23 00 00 - General Mechanical Requirements.

1.4 SUBMITTALS

- A. Submit product data, shop drawings, and samples in accordance with Section 23 00 00 - General Mechanical Requirements, Part 1, and as follows:

1. Product Data:
 - a. Plumbing fixtures.
 - b. Plumbing supplies and trim.
- B. Product Options and Substitutions: In accordance with Section 230000 - General Mechanical Requirements, Part 2.
- C. Submit test reports and certifications in accordance with Section 230000 - General Mechanical Requirements, Part 3.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (Unless otherwise specified herein or on the Drawings.)

- A. Toilets: Acorn.
- B. Lavatories: Willoughby.
- C. Showers: Whitehall.
- D. Electronic Faucets: As provided with lavatories.
- E. Electronic Flush Valves: As provided with toilets.
- F. Shower Valves: As provided with showers.
- G. Toilet Seats: As provided with toilets.
- H. Trim, unless specified otherwise:
 1. Supplies and Stops: Chicago, Zurn, Brasscraft, or equal.
 2. Sink Drains and Traps: McGuire Mfg. Co., Engineered Brass Co., or equal.
 3. Insulated Covers for Barrier Free Fixture Drains and Supplies: Truebro Inc., Plumberex, or equal.

2.2 MATERIALS

- A. General:
 1. Fixtures and trim shall be complete for proper installation as described in the manufacturer's catalog and the Fixture Schedule on the Plumbing Drawings.
 2. Fixture trim and exposed metal items shall be polished chrome plated, unless otherwise noted, and pipes passing through walls shall have polished chrome plated escutcheon plates.
 3. Fixtures shall be free from imperfections, true as to line, angles, curves, and color; smooth, watertight, and practically noiseless in operation.
 4. Color of fixtures shall be white unless otherwise noted.

5. Exposed Pipe, Fittings, Traps, Escutcheons, and Accessories, Above and Below Fixtures:
 - a. Chrome plated (CP) brass.
 - b. Flat one-piece cast-brass escutcheons with set-screw for piping.
 - c. Covering tubes not permitted.
6. Supply Fittings with:
 - a. Renewable seats or replaceable internal units.
 - b. Composition washers.
 - c. All metal indexed handles.
 - d. Screwdriver or lockshield stops.
7. All faucets shall be California Energy Commission listed with laminar flow control, aerators prohibited.
8. Install Schedule 40 red brass nipple at water supply stop valve and waste connections to each fixture.

2.3 TRIM

- A. Supply Stops: Chicago Faucets No. 698-ABCP angle stop fitting with loose key, 1/2-inch NPT inlet and outlet, and lead-free.
- B. Traps: Minimum 17 B&S gauge chrome plated cast brass P-trap without cleanout plugs.
 1. For Sinks with 1-1/4" Outlets: McGuire Model B8902.
 2. For Sinks with 1-1/2" Outlets: McGuire Model B8912.
- C. Insulated Drain and Supply Covers at Barrier Free Sinks: Truebro Inc. "Lav Guard 2" one-piece molded form fitting PVC covers containing microbial/anti-fungal and UV inhibitors with self-extinguishing flammability characteristics, smooth tamper-resistant and non-abrasive snap-lock fastening system, and internal trim grooves for adjustable fitting to 1-1/4" or 1-1/2" sink strainer, tailpiece, and cast brass or tubular P-trap assemblies and 3/8" or 1/2" hot and cold angle stop assemblies. Drain covers shall be provided with a weep hole at the lowest point for leak drainage and ventilation. Supply covers shall be provided with removable caps for water shut-off access.
 1. Covers may be eliminated at sinks with supplies and drains concealed behind protective enclosures.

2.4 FIXTURES

- A. LAV-1 Lavatories (Wall Mount, Barrier Free, Patient Toilet Rooms):
 1. As scheduled on Drawing P0.1.

- B. WC-1 Toilets (Floor Mount, Barrier Free, Patient Toilet Rooms):
 - 1. As scheduled on Drawing P0.1.
- C. SH-1 Showers (Wall Mount, Barrier Free, Patient Shower Rooms):
 - 1. As scheduled on Drawing P0.1.
- D. DF-1 Drinking Fountains (Wall Mount, Barrier Free):
 - 1. As scheduled on Drawing P0.1.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Plumbing Fixtures:
 - 1. Install fixtures and plumbing-related equipment in accordance with manufacturer's recommendations except as shown otherwise. Make all plumbing connections as indicated on the Drawings and as required for a neatly finished, operable, and watertight installation.
 - 2. The general layout of piping shown on the Drawings indicates branch runouts terminated at individual or groups of fixtures. The piping shall be considered continuous and finally connected to all fixtures and equipment.
 - 3. Rough-in supplies level, equally spaced, and symmetrical with fixture.
 - 4. Install each fixture with trap easily removable for servicing and cleaning. Install fixture stops in readily accessible location for servicing.
 - 5. Rough-in wastes in alignment with the fixture drain. Misalignment will not be acceptable.
 - 6. Caulk all deck-mounted trim at the time of assembly, including fixture and casework mounted. Caulk all self-rimming sinks installed in casework. The butted space between fixtures and the wall, counter, or floor on which they are mounted shall be sealed with silicone caulking compound, same color as fixture.
 - 7. Make up trim with care and with the proper tools in order that no tool marks show after installation.
- B. Water Supplies:
 - 1. Each water supply to a fixture, equipment, or faucet shall have a stop in the branch connecting thereto. The stop shall be screwdriver partition stop at finished wall locations and a rough brass globe valve at rough location. Angle stops for deck-mounted faucets shall have an IPS inlet.

2. Water supplies to fixtures shall be 1/2-inch minimum size and fitted with an individual water hammer arrestor (shock arrestor, shockstop). Water hammer arresters for individual supplies to lavatories, sinks, showers, bath tubs, and other fast closing valves 3/4-inch and smaller shall be Sioux Chief Model 652-A Hydra-Rester, Precision Plumbing Products (PPP) Model SC-500, or equal, with threaded connection.
3. Cover unoccupied fixture faucet holes with faucet hole covers.
4. Securely fasten screwed adapter fittings behind water supply stubouts to the structure. Supply piping shall be rigidly restrained.

3.2 PROTECTION AND CLEANING

- A. In accordance with Section 230000 - General Mechanical Requirements, and Section 221000 - Plumbing Piping Systems.
- B. Protect finished surfaces of fixtures from accidental damage or discoloration by use of protective covering.
- C. Prior to University acceptance, clean fixtures with compounds recommended by manufacturer, and remove stains and marks from surrounding walls and countertops.

END OF SECTION 22 19 00

SECTION 23 00 00

GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Includes: All labor, materials, and equipment to furnish, install, test, and commission mechanical systems, in conformity with applicable codes and authorities having jurisdiction for work, including, but not limited to:
 - 1. Heating, Ventilating, and Air Conditioning Systems.
- B. The requirements of Section 23 00 00 - General Mechanical Requirements also apply to the following work:
 - 1. Fire Sprinkler Systems (Division 21).
 - 2. Plumbing Systems (Division 22).
 - 3. Mechanical Systems (Division 23).
- C. Completeness of Systems: Provide a complete working installation with all systems and equipment called for in proper operating condition. Documents do not undertake to show or list every ancillary item or accessory to be provided. Where it can be reasonably inferred that an item not shown or listed is necessary for proper operation of systems which are shown or listed, provide such ancillary items and accessories at no additional cost.
- D. Construction Phasing:
 - 1. Should the Owner take occupancy of the project area at the end of the Contract period, but before mechanical work is complete, provide all labor and materials, including temporary materials and equipment, necessary to operate mechanical systems for the Owner's use until Final Acceptance of the project.

1.2 RELATED WORK

- A. Electrical:
 - 1. Provide all electrical work specified in Divisions 21, 22, and 23 in accordance with the requirements of Division 26.
 - 2. Coordinate voltages, amperages, horsepower ratings and other requirements for motor starters, disconnects, and power connections to mechanical equipment and control panels.

- B. Casework and Equipment: Provide all necessary outlets, piping, trim and ductwork connections for equipment furnished by the Owner, specified under other Divisions, or shown on the Drawings.
- C. Painting:
 - 1. Properly prepare work to be finish painted in accordance with Section 099123 – Interior Painting. Prime and finish paint all exposed insulation and metal surfaces, including supports and appurtenances, not otherwise factory finish painted or stainless steel.
 - a. Locations where finish painting of mechanical work is required:
 - 1) Exposed within or visible from occupied spaces.
 - b. Colors: To match surrounding surfaces, or as directed by the Owner's Representative. Confirm all colors with the Owner's Representative.
 - 2. If factory finish on equipment furnished by Contractor is damaged in shipment or during construction, refinish equipment to satisfaction of Owner's Representative. Furnish one can of touch up paint for each factory finish to match final finished surface of product.
 - 3. Repair damaged galvanizing with not less than two heavy coats of zinc rich coating.

1.3 REQUIREMENTS OF REGULATORY REQUIREMENTS

- A. In accordance with Section 01080 - Regulatory Requirements.
- B. Work shall comply with all applicable and currently adopted editions of the California Code of Regulations (CCR) and other applicable codes, including but not limited to:
 - 1. 2016 CALIFORNIA BUILDING CODE (CBC).
 - 2. 2016 CALIFORNIA MECHANICAL CODE (CMC).
 - 3. 2016 CALIFORNIA PLUMBING CODE (CPC).
 - 4. 2016 CALIFORNIA ELECTRICAL CODE (CEC).
 - 5. 2016 CALIFORNIA FIRE CODE (CFC).
- C. Work shall comply with currently enforced and relevant federal, local and utility company rules and regulations.
- D. Nothing in the Drawings or Specifications shall be construed as requiring or permitting work not conforming to applicable laws, ordinances, rules, and regulations.
 - 1. When requirements of applicable codes, ordinances, rules, and regulations are more stringent than requirements of the Drawings and Specifications, then requirements of applicable codes, ordinances, rules, and regulations shall take precedence.

2. When requirements of Drawings or Specifications are more stringent than, and not contrary to, requirements of applicable codes, ordinances, rules, and regulations, then requirements of Drawings and Specifications shall take precedence.

E. Drawings or Specifications do not purport to repeat requirements of codes except where necessary for clarity.

1.4 REFERENCE STANDARDS

A. In accordance with Section 01090 – Abbreviations, Symbols and Definitions and the following:

B. Published specifications, standards, tests, or recommended methods of the following trade, industry, or governmental organizations apply to work in Divisions 21, 22, and 23. Additional standards may be specified in subsequent sections or referenced in applicable codes and regulations.

1. AABC - Associated Air Balance Council
2. AFBMA - Anti-Friction Bearing Manufacturer's Association.
3. AGA - American Gas Association
4. AMCA - Air Moving and Conditioning Association
5. ANSI - American National Standards Institute
6. AHRI - Air Conditioning, Heating, and Refrigeration Institute
7. ASA - American Standards Association
8. ASC - Adhesive and Sealant Council
9. ASHRAE - American Society of Heating, Refrigeration and Air Conditioning Engineers
10. ASME - American Society of Mechanical Engineers
11. ASPE - American Society of Plumbing Engineers
12. ASSE - American Society of Sanitary Engineering
13. ASTM - American Society of Testing and Materials
14. AWWA - American Water Works Association
15. AWS - American Welding Society
16. CCR - State of California Code of Regulations
17. ETL - Edison Testing Laboratories
18. FM - Factory Mutual Engineering
19. FS - Federal Specifications
20. IEEE - Institute of Electrical & Electronic Engineers
21. NEMA - National Electrical Manufacturer's Association
22. NFPA - National Fire Protection Association
23. OSHPD - Office of Statewide Health Planning and Development
24. PDI - Plumbing and Drainage Institute
25. SMACNA - Sheet Metal Contractors National Association
26. UL - Underwriters' Laboratories, Inc.

C. When materials or equipment are specified to conform to referenced standards, submit proof of conformance for review.

1.5 QUALITY ASSURANCE

- A. Site Examination: Visit the site of the work, take measurements, examine all existing areas where work is to be performed and get such other information necessary for proper execution of the work. Ascertain and check all conditions with the Drawings and Specifications, existing conditions and by what means the work is to be performed. No allowance shall subsequently be made for any extra expense or delay due to failure or neglect to make such examination and correlation.
1. Report, in writing, any condition which will prevent proper execution of the work. Beginning work without reporting unsuitable conditions to the Owner's Representative constitutes acceptance of conditions by the Contractor. Remove, modify, and reinstall any new work affected by unsuitable conditions at no additional cost to the Owner.
- B. Product Compliance:
1. Use of manufactured devices and insulating materials of the types listed in California Code of Regulations, Title 24, Part 6, Energy Code, are limited to those that have been certified to the California Energy Commission.
 2. Supply all equipment and accessories in compliance with referenced and applicable standards, and all applicable codes and authorities having jurisdiction.
 3. Electrical equipment shall be listed by UL and bear the UL label.
- C. System Commissioning:
1. Work includes mechanical system checking, start-up, testing, adjusting, balancing, fine-tuning, and troubleshooting as required to provide systems in perfect operating condition with optimum performance. Cooperate with others to identify and resolve installation and operational problems during the start-up period. Where individual pieces of equipment are specified hereinafter to be started up by, or under the supervision of, manufacturer's technicians or authorized representatives, provide all assistance necessary to start up, test, and troubleshoot new systems.
 2. Provide troubleshooting, fine-tuning, seasonal adjustments, and other corrective actions for one year following the date of Final Acceptance of the entire project. Provide maximum 24-hour response to complaints or operational problems during this period. Work performed during this period shall be considered warranty work.
 3. Contractor agrees that upon failure to reasonably respond to and act upon complaints or operational problems within the 24-hour time period, the Owner is authorized to have corrections and adjustments made and Contractor shall promptly pay the Owner for the cost of such work. Any action taken by the Owner shall not affect warranty provisions or Contractor's responsibilities in any way.

1.6 SUBMITTALS

- A. General:

1. Submit shop drawings, catalog data, supplemental data, and samples for all materials and equipment in accordance with Section 01340 – Shop Drawings, Product Data and Samples, and as specified hereinafter. Where requirements differ, the more stringent or comprehensive requirements apply.
 - a. Submittals shall include every major material and equipment item specified herein or described on the Drawings.
 - b. Comply with expedited product submittal and delivery requirements noted herein and on the Drawings.
 - c. Comply with hardcopy and electronic submittal procedures agreed upon for this project.
2. Forward all submittals to Owner's Representative, together, at one time. Individual or incomplete submittals are not acceptable and shall be returned without review. Separate and complete packages shall be submitted for the following:
 - a. Long lead equipment items needing early review in order to meet contract schedule. Submit long-lead items within fourteen (14) days after Notice to Proceed.
 - b. HVAC air side products.
 - c. Plumbing products.
 - d. Fire protection products.
 - e. Shop drawings by phases.
 - f. Test and Balance Reports by phases.
 - g. Operating and Maintenance Manuals and other materials to be turned over at the end of the project. Some materials require submittal at the end of phases.
3. Identify each item by manufacturer, brand, trade name, number, size, rating, and whatever other data is necessary to properly identify and check materials and equipment. Words "as specified" are not sufficient identification.
 - a. When manufacturer's reference numbers are different from those specified, provide correct cross reference numbers for each item. Submittals shall be clearly marked and noted accordingly.
 - b. When fixtures, equipment and items specified include accessories, parts and additional items under one designation, submittals shall be complete and include all required components.
 - c. Submittals of electrically powered equipment and devices shall include composite wiring diagrams, motor efficiency and power factor data.
 - d. Where submittals cover products containing non-metallic materials, include "Material Safety Data Sheet" (MSDS) from manufacturer stating physical and chemical properties of components and precautionary considerations required.
4. Organize submittals in same sequence as they appear in Specification Sections, Articles, and Paragraphs.

- a. Identify each submittal item by reference to the Specification Section, Article, and Paragraph in which each item is specified, the Drawings and detail number in which it appears, and the mark number appearing on the equipment schedule.
 5. Index submittals sufficient to locate and identify each item. Sporadic submittals, incomplete or unidentified data, or data not showing features necessary to coordinate item with other work will not be accepted.
 6. Contractor assumes all responsibility for additional cost and delays resulting from incomplete or improperly formatted submittals and substitutions.
- B. Format: Submit both hard and electronic submittal packages. Organize electronic submittal packages as PDF files organized and indexed as described herein for hard copies.
- C. Binders: If this project requires hard copies of submittal packages, then prepare submittal material in accordance with the following:
1. Insert all literature in standard three (3) ring binders for 8-1/2 inch pages with individual tabs. Do not staple literature on different products together.
 2. Number all binders on the outside of the cover and indicate the Specification Sections covered in that submittal. Mark one binder "No. 1 Engineer's Copy." This binder shall contain original manufacturer's literature.
 3. If, on the other hand, the Owner's Representative requires electronic submittal packages in lieu of hard copies, then prepare and submit PDF files organized and indexed as described herein.
- D. Drawings larger than 11 inches by 17 inches (folded) shall be submitted as full size plots, not larger than the Contract Drawings.
- E. Submittal literature, drawings, and diagrams shall be specifically applicable to this Project and shall not contain extraneous material or optional choices. Literature shall be clearly marked to indicate proposed items, including options and accessories. Clearly identify if product is a substitution or deviates from specified materials, construction, ratings, or performance.
- F. Submittals shall be reviewed by the Owner's Representative and one the following Actions shall be noted for each product:
1. "No Exception Taken" means that the product data is acceptable and no additional product documentation is required. Acceptance of product data shall not relieve the Contractor of responsibility for errors or omissions therein, or from compliance with all requirements of the Contract Documents. Owner's Representative shall not be responsible for detecting deviations that are not specifically called out as such in the submittal. At the end of the project, submit record copies of approved documentation in accordance with Paragraph 1.6N.2 below.

2. “Make Corrections Noted” means that the product data will be acceptable if the noted corrections or changes are made. Contractor is free to order the product and no further resubmittal is required provided the noted corrections or changes are made. Acceptance of product data shall not relieve the Contractor of responsibility for errors or omissions therein, or from compliance with all requirements of the Contract Documents. Owner's Representative shall not be responsible for detecting deviations that are not specifically called out as such in the submittal. Make the indicated corrections to the product data and, at the end of the project, submit record copies of approved documentation in accordance with Paragraph 1.6N.2 below.
 3. “Revise and Resubmit” means that the product data is not acceptable and must be revised and resubmitted. Contractor is not free to order the product and the factory is not free to begin fabrication until new documentation is submitted and marked "No Exception Taken" or "Make Corrections Noted". Make all required corrections or changes to product documentation prior to resubmission. If specific aspects of a product are noted "Revise and Resubmit", then only product documentation for those aspects need be resubmitted.
 4. “Rejected. Submit Specified Item” means that the product is not as specified and will not be considered under any circumstance. Contractor shall submit the specified product.
 5. “Returned Without Review” may mean that the submittal is substantially incomplete and cannot be properly reviewed, or that the product data should not have been submitted in the first place.
- G. Resubmittals shall be reviewed for compliance with comments made on the original submittal. Do not resubmit products marked “No Exception Taken” or “Make Corrections Noted”, unless substantial changes have been made to the proposed product. Resubmittals shall be clearly marked with a resubmittal number and dated. Clearly identify any revisions from the original submittal.
1. Reimburse Owner for all costs associated with reviewing submittals after the first resubmittal. Owner's costs to review resubmittals shall be deducted from the Contract Amount.
- H. Any materials or equipment installed without formal submittal review and approval shall be subject to immediate removal. The installation shall be brought into full compliance with the Contract Documents at no additional cost to the Owner.
- I. Samples: Submit as required in subsequent Specifications Sections, or as directed by the Owner's Representative, samples of any product which are not exactly as specified in order to establish equivalence with specified features, quality, and appearance.
- J. Shop Drawings:

1. All shop drawings shall be prepared using AutoCAD or compatible system on project backgrounds. Electronic backgrounds are available from the Owner's Representative. Contract Mechanical Drawings are diagrammatic representations of design intent as described in Paragraph 1.8B. Layouts and details on Mechanical Drawings shall not be copied or reproduced in any way for use as shop drawings. Contractor is responsible for field verifying all dimensions and conditions that affect this work.
 - a. Since the ductwork installation is the most complex aspect of this project, the sheet metal 3D modeler shall take the lead in coordinating space allocation among the work of other trades.
 - b. Verify all dimensions in the field, document all existing conditions that affect new work, and prepare accurately dimensioned 3D model and 2D shop drawings.
2. Prepare and submit layout floor plans and sections of equipment rooms and roof plans in minimum 3/8 inch = 1 foot scale. Prepare and submit layout floor and roof plans for other areas in minimum 1/4 inch = 1 foot scale.
3. Prepare and submit large-scale plans, sections, and details in minimum 3/4 inch = 1 foot scale for equipment supports, frames, bases, and for areas requiring close coordination with existing structural, architectural and site conditions, and with the work of other trades.
4. Shop drawings shall be dimensionally accurate and detailed, giving complete dimensions of all locations, elevations, and clearances. Shop drawings shall indicate room names and numbers. Show ductwork with double-line representation and details of all fittings. Piping may be shown with single-line representation, except at other equipment connections where more detail is necessary. Show all duct and pipe sizes, including sizes and airflows at all air inlets and outlets. Show throw directions for all supply diffusers. Identify all equipment in accordance with project nomenclature. Show exact locations of the following:
 - a. Valves and piping specialties, including vents and drains.
 - b. Dampers.
 - c. Orientation of fire and smoke damper actuators and location of ceiling access openings.
 - d. Duct smoke detector locations coordinated with fire alarm installer.
 - e. Access doors and panels and ceiling access openings.
 - f. Beam, slab, and ceiling elevations.
 - g. Control panels and devices.
 - h. Electrical panels and motor control centers.
 - i. Light fixtures and ceiling grid.
5. Shop drawings shall accurately document existing mechanical conditions within the project area, including those which affect the installation of new work.

6. Where significant deviations from general arrangements shown on the Drawings are necessary, or where modification of existing work is necessary, clearly identify areas requiring special review by circling those areas on layout shop drawings. The direction of the Owner's Representative shall be followed with respect to acceptable offsets and other modifications.
 - a. Contract Drawings do not show all existing conditions and do not show existing conditions in exact locations. Carefully survey and accurately document all existing ductwork, piping and risers to remain and include on project Record Drawings.

7. Shop Drawing Coordination:
 - a. Fully coordinate shop drawings with all aspects of the work. Contract Drawings shall not be traced or reproduced and used as shop drawings.
 - b. Affix a "Coordination Assurance" stamp to each mechanical layout shop drawing, signed by the Contractor and all subcontractors performing work in the same area, certifying that the installation is fully coordinated with all the work. No layout shop drawings will be reviewed without stamped and signed coordination assurance. Assume all cost for revisions to work which is not coordinated prior to fabrication and installation.
 - 1) For projects in which shop drawings are electronically submitted, "Coordination Assurance" stamp language and signatures shall be separately collected, specifically referencing the submitted sheets, and electronically included with the submittal.
 - c. Coordination Shop Drawings: Maintain at the job site an up-to-date set of drawings or an electronic 3-D model that show all relationships of structure, equipment, ducts, pipes, conduits, cable trays, electrical equipment, panels, lighting fixtures, and other devices, indicating exact locations and elevations of respective elements.
 - 1) Do not submit Coordination Shop Drawings for review, unless requested by the Owner's Representative.

8. Shop drawings shall be reviewed by the Owner's Representative and Actions described in Paragraph 1.6F shall be noted for each drawing.
9. Maintain complete sets of up-to-date shop drawings at the jobsite, corrected in accordance with submittal review comments and field-approved modifications.
10. See additional shop drawing requirements in subsequent Sections.

K. Deviations and Completeness of Submittals:

1. Call specific attention, in writing at the beginning of each submittal, to all substitutions and to all product features, options, and performance characteristics which differ from requirements of the Contract Documents.

2. Acceptance of shop drawings or product data which contain deviations or are incomplete shall not relieve the Contractor of responsibility for compliance with specific requirements of the Contract Documents, unless the Contractor has specifically informed the Owner's Representative in writing of each such deviation and the Owner's Representative has given written approval for such deviations. The Owner's Representative shall not be responsible for detecting or reviewing deviations which are not specifically identified as such on submittals. Without any additional cost to the Owner, replace any installed product which is not in conformance and was not submitted with specific notations identifying product deviations.
- L. Owner's review of submittals is not intended to verify dimensions or quantities, or to coordinate items shown on these submittals. Review is for general conformance with design concept of the Project and general compliance with the information given in the Contract Documents. Contractor is responsible for dimensions, which shall be confirmed and correlated at the job site, for fabrication processes and techniques of construction, for coordination of work and the satisfactory performance of the work.
1. Submittal review comments do not direct the Contractor to perform extra work, and no such direction shall be inferred from submittal review comments. Contractor shall pursue any issues related to extra work with the Owner before proceeding with same.
- M. Electronic Files:
1. Indemnification Agreement for Transfer of Computer-Based Information: Contractor shall agree to an indemnification agreement furnished by the Owner's Representative prior to downloading electronic files.
- N. Operating and Maintenance Instructions and Manuals: In accordance with Section 01700 – Project Closeout, and as follows:
1. When work is not more than fifty percent (50%) complete for each project phase, submit two (2) sets of preliminary operating and maintenance manuals for review. After review and not less than thirty (30) days prior to scheduling training sessions for that project phase, make all noted corrections or additions and furnish the number of copies required under Section 01700 – Project Closeout.
 - a. At the end of each subsequent phase, collect and update information in the operating and maintenance manuals. Do not submit duplicate information. At the end of the project, ensure that all required information is included in all copies of the operating and maintenance manuals.

2. Operating and maintenance manuals shall include complete updated submittal data for all serviceable products, plus instruction sheets, bulletins, and all pertinent information required by the Owner for proper start-up, maintenance, operation, replacement, and adjustment of each and every piece of equipment furnished. Bind product information in hard covered, adjustable loose-leaf 3-ring binders, typed and indexed into sections following the alpha-numeric system used in these Specifications, and tabbed for easy reference. Provide separate indexes for each specification Section and tabs for each equipment item within each Section. Include information for all specified items mentioned under shop drawings and submittal data herein.
 - a. Except as noted below, do not include data for pipe, fittings, solders, brazing alloys, joint compounds, hangers and supports, cleanouts, sealants, sleeves, flashings, sheet metal ductwork, duct flanges, access panels, and insulation. Other non-serviceable products may be omitted from the operating and maintenance manuals if specifically approved by the Owner's Representative. Assume that all products are "serviceable" unless approval is granted to omit products from the operating and maintenance manuals.
 - b. Do not include submittal review letters by the Owner's Representative.
3. Include a copy of the final Test and Balance Report in each set of operating and maintenance manuals.
4. Furnish maximum 2-1/2-inch D-ring binders organized and tabbed in accordance with specification paragraph numbers. Each binder shall include a title on the spine and cover indicating all primary project information and information included in that binder. Each binder shall include a detailed index of information contained in that binder.
5. For each type of equipment, provide a separate tab and include required information in the following sequence:
 - a. Equipment Summary Sheets: List all equipment, tag numbers, sizes, locations, manufacturer's name and complete model number for assembly and components, installing Contractor's name, address and phone number, local service representative's name, address and phone number, internet web page addresses to manufacturer's specific product operating and maintenance instructions, and complete schedule of equipment operating data including motor, belt and sheave data.
 - b. Extended Warranty: Furnish separate signed warranty statements for each extended warranty specified hereinafter. Clearly state warranty period, and all inclusions and exclusions. Indicate name, address and phone number for warranty calls.
 - c. Maintenance Summary Sheets: List all required periodic inspections, testing, maintenance and lubrication, lubricants required, and references to page numbers within product literature for more complete instructions. Indicate type, size and replacement number for bearings, belts and sheaves. Indicate proper belt tension and furnish any special tools required to measure or obtain this tension.

- d. Detailed Equipment Data Sheets: Include approved product data, manufacturer's service manual, recommended spare parts lists, flow diagrams, troubleshooting tables, fan curves, wiring diagrams, exploded views, parts lists, optional accessories, assembly and disassembly instructions, and detailed installation, start-up, operating and maintenance instructions. Include data for spring isolators and flexible connectors with related equipment. Include start-up and test reports for variable frequency drives, fans, etc.
 - e. Download all current web-based product and O&M information for all products furnished on this product and burn onto CD ROMs, DVDs, or flash drives. Organize and index information for easy retrieval.
 - f. Create a comprehensive electronic version of the final approved O&M manual in PDF format. PDF files shall have sidebar indices/bookmarks for easy routing to specific products within the O&M manual. Organize and index the electronic O&M manual similar to the hard copy versions.
6. Provide original printings of all manufacturer supplied information. Photocopies or facsimile copies whose text is not clearly readable will not be accepted. Cross out all text, figures, tables and diagrams not relating to specific models provided. Clearly indicate models and sizes provided on general catalogue sheets or tables.
- O. Record Drawings: In accordance with Section 01700 – Project Closeout, and as follows:
1. Submit three (3) complete sets of up-to-date Engineering Design (Contract) Drawings, and one (1) complete set of computer discs with all drawings converted to both AutoCAD and PDF formats.
 - a. Fully illustrate all revisions made in course of work, including revisions to details, schedules, diagrams, and sequences.
 - b. Include all field changes, adjustments, variances, substitutions and deletions, including all Change Orders.
 - c. Show in their exact locations, the type and function of all concealed valves, dampers, coils, air vents, and drains.
 - d. Draft changes to original engineering design drawings in AutoCAD. Remove professional engineer's stamp, and add "Contractor's As Built" and date in the Revisions block on each sheet.
 2. Submit three (3) complete sets of shop drawings, and one (1) complete set of computer discs with drawings converted to both AutoCAD and PDF formats, updated to show actual installed conditions, including exact locations of all valves, dampers, coils, vents, and drains. Shop drawings shall accurately show existing conditions in the work area and any modifications thereto.
 - a. Prior to closing ceilings, demonstrate to the Inspector of Record that accurate as-built drawings have been prepared All new and existing valve locations shall be shown. All valves and dampers shall have red nylon flags.
 - b. Submit one (1) 3-D model in Revit MEP or AutoCAD 3-D format of all existing and new work in project areas, with all work shown in its final configuration.

- P. Submit Certificate of Disinfection for all modified portions of domestic water systems.
- Q. Submit all test reports, logs, checklists, meeting minutes, and certifications specified herein.

1.7 DEFINITIONS

- A. In addition to other definitions in this Contract, the following definitions shall apply to work in Divisions 21, 22, and 23:
 - 1. Except as otherwise defined in greater detail, the terms "provide", "furnish" and "install" shall have the following meanings:
 - a. "Provide" or "provided" shall mean "furnish and install".
 - b. "Furnish" or "furnished" does not include installation.
 - c. "Install" or "installed" does not include furnishing when the statement in which it is used also identifies who is furnishing the product or material. When "install" is used to describe how a product or material is put into place, it does not imply that the product or material is furnished by others.
 - 2. "Work": Includes furnishing and installation of all materials, equipment, apparatus, controls, and other items required to provide complete and operating systems.
 - 3. "Piping": Includes all pipe, tube, fittings, flanges, valves, specialties, controls, strainers, supports, braces, unions, traps, drains, vents, and related items.
 - 4. "Wiring": Includes all raceway, fittings, wire, boxes, and related items.
 - 5. "Concealed": Embedded in construction, installed in furred spaces, above ceilings, in trenches, or in crawl spaces.
 - 6. "Exposed": Not installed underground or concealed as defined above.
 - 7. "Control" or "Actuating Devices": Includes automatic controllers, relays, sensing, switching and transmitting devices, and appurtenances directly controlling or related to the operational control of equipment.

1.8 SPECIFICATIONS, DRAWINGS, EXISTING CONDITIONS, AND COORDINATION

- A. Specifications:
 - 1. Specifications, in general, describe the quality and character of materials and equipment. Specifications contain both performance and technical criteria. Where performance criteria are specified, provide all necessary engineering design and analyses and install the work as necessary to meet those criteria.
 - 2. Specifications may contain different requirements for the same product or construction method. Wherever the specifications contain differing requirements for the same product or construction method, the more stringent requirements shall apply. It shall not be acceptable to reduce any specification requirement due to lesser requirements interpreted from other parts of the specifications.

3. Specifications are of simplified form and include incomplete sentences, especially where grouped features or tasks are listed. Words such as "a", "all", "the", "provide", etc., and phrases such as "the Contractor shall" and "shall be provided" are often omitted for brevity.

B. Drawings:

1. For purposes of clarity and legibility, Drawings are diagrammatic representations to the extent that work is not shown in exact locations and many offsets, bends, joints, and special fittings are not indicated. The intent is to show size, capacity, approximate routings, and general relationship of one element of work to another. The intent is not to show exact locations, details, or arrangements. Ductwork and piping on Contract Drawings are not coordinated with actual locations of electrical conduits, cable trays, sprinkler lines, wall and ceiling framing, and other above-ceiling work. Ductwork and piping layouts on Contract Drawings shall not be scaled to establish exact locations and routings. Work shall be installed in accordance with detailed and dimensioned shop drawings that have been coordinated with existing conditions and the work of other trades. Contractor shall perform field investigations and detailed design iterations as required to coordinate the installation with existing conditions and new work.
2. The Contract Documents do not purport to guarantee that pipes, ducts and equipment can be installed in locations shown on the Drawings without offsets or adjustments to new or existing work. Exact arrangement, duct shapes, locations, distances and elevations shall be governed by actual site conditions and the requirements of other work. Dimensions indicated on the Drawings shall be interpreted as limiting dimensions. Before proceeding with work, check and verify all dimensions in the field.
3. Make adjustments that may be necessary in order to resolve space problems, preserve headroom, maintain access to valves and equipment, properly install metering and control devices, and avoid structural members, existing conditions and new work. Make such adjustments as vertical or horizontal offsets, alternative routings, sleeves through ducts, and changes to duct dimensions and shapes that may be necessary, whether shown or not, without extra cost to the Owner. Provide all additional piping, ductwork, supports, insulation, etc., necessary to accomplish these adjustments.
4. Adjustments made to general arrangements shown on the Drawings shall not increase the pressure requirements of fan systems by more than 5% of the scheduled fan static pressure and shall not result in higher noise levels in occupied areas. This safety factor is included in scheduled fan static pressures.
5. Owner's Representative reserves right, at no increase in Contract cost, to make any reasonable change in location of mechanical items exposed at ceiling and/or on walls, to group them into orderly relationships and/or increase their utility. Contractor shall verify Owner's Representative's requirements in this regard prior to roughing-in.

C. Existing Conditions:

1. Whether shown on the Drawings or not, make adjustments to existing work as necessary to install new work and maintain access to valves and equipment. Make such adjustments as vertical or horizontal offsets of existing pipes, ducts, and conduits, relocation of supports and seismic bracing, alterations to wall and ceiling framing and finishes, etc., that may be necessary, without additional cost to the Owner. Disassemble and reassemble existing conditions as necessary to allow the installation of new work. In many cases, modifications to existing conditions are not called out on the Drawings. Include reasonable time, material and labor allowances for modifications to existing conditions, including conditions shown or reasonably inferred from the Contract Documents, and unforeseen conditions. Allowance for modifications to unforeseen existing conditions shall be based on the complexity of work, spatial constraints, age of the facility, and amount of existing documentation available, and shall not be considered change order work.
2. Any relocated piping or ducts shall be replaced with new materials of the same material and quality as the existing systems to which they are connected.
3. At concrete wall and floor penetrations, provide all coring necessary to install new work. Locate core drills and other openings to miss existing reinforcing bars. Where reinforcing bars must be cut, locate penetrations to cut the minimum number of bars. Use positive non-destructive methods for locating existing reinforcing bars. Where bars must be cut, submit detailed sketches of penetration and bar locations for review by the Owner's Representative. Relocate penetrations as directed and provide external structural steel reinforcement around opening in accordance with details on the Structural Drawings.
4. See Paragraphs 1.10, 3.1G, 3.1H, and 3.2 hereinafter.

D. Coordination:

1. Fully coordinate the installation with all aspects of the work. If necessary, and before work proceeds in congested areas, prepare supplementary coordination drawings which show all crossings of structure, ducts, pipes, conduits, cable trays, electrical equipment and panels, light fixtures, etc., indicating exact locations and elevations of respective elements.
 - a. Where clarification is requested with regard to conditions which affect the proper installation of this work, submit such requests with drawings, showing Contractor's recommended installation, coordinated with all existing conditions. Include any additional work necessary to overcome "tight" conditions. Clearly identify areas requiring Owner's Representative's review.
 - b. Acceptance of Contractor proposed routings shall not relieve the Contractor from responsibility for coordinating the work and identifying all implications of proposed routings. Contractor shall not submit change requests and shall not be paid for additional work that becomes apparent due to proposed routings that are accepted by the Owner's Representative.
2. Coordinate electrical interlocks of mechanical equipment with requirements in Division 26.
3. Provide templates, information, and instructions to properly locate holes, openings, pads, curbs, inserts, etc., to be cut or provided for the work.

E. Discrepancies:

1. In the event of discrepancies within the Contract Documents, the Owner shall be notified within sufficient time prior to the Bid Deadline to allow the issuance of an Addendum.
2. If time does not permit notification or clarification of discrepancies prior to the Bid Deadline or if questions regarding discrepancies are not raised during the Bid period, then the following shall apply: In the event of conflict within the Drawings and Specifications involving quantities or quality, the greater quantity (or size) and higher quality shall apply. No additional allowances will be subsequently made because of errors, ambiguities, or omissions which reasonably could have been discovered during the preparation of the Bid.

1.9 COOPERATION

- A. Ensure that the work is installed at a time when space required is accessible and in such a manner that the work may be installed as shown on the Drawings. Schedule work to avoid delays, interferences, and unnecessary work.
- B. When work is required outside the project area, such as connections to existing piping and ductwork, or testing and balancing activities that affect occupied areas, then schedule such work after normal working hours or at times directed by the Owner such that disruption is minimized. Refer to Section 01310 – Contract Schedules for additional information.

1.10 EXISTING SYSTEM SHUTDOWN

- A. During the entire course of construction, existing HVAC, plumbing, medical gas, fire protection, and hydronic systems shall only be shut down for designated periods. The date, time, and duration for system shutdown shall be dictated by the Owner's Representative and the Contractor shall be advised of same in advance. During the shutdown period, all connections or modifications to existing equipment, ductwork, piping and control systems shall be made and completed. Ductwork, piping, fittings, and controls shall be pre-measured, prefabricated, pretested, and be ready for final connection to cut shutdown time to an absolute minimum. No extra payments will be made for premium time during shutdowns.
 1. Utility shutdowns of rotating equipment such as fans, pumps, etc., shall be performed only by the Owner's operating personnel and not by the Contractor. Provide specified written notice of all required shutdowns to the Owner's Representative.
- B. Trace existing systems as necessary to identify unlabeled piping and areas affected by system shutdowns. Utilize existing documentation provided by the Owner, interview the Owner's Representative and Owner's building operating personnel regarding accuracy of existing documentation, and provide visual observations to verify existing conditions. Discuss extent, implications, and proposed timing of existing system shutdowns in advance.

1.11 PRODUCT DELIVERY, HANDLING, AND STORAGE

- A. Where necessary, furnish large equipment items in sections to permit installation through available building openings, doorways, and service elevators. Anticipate and coordinate means by which large equipment items will be handled.
 - 1. Field disassembly and reassembly of equipment shall not affect product warranties.
 - 2. Resulting condition of field assembled equipment shall be equal to factory assembly in all respects.

1.12 PROTECTION OF MATERIALS

- A. Protect materials and equipment from loss, damage, water contamination, condensation, dirt, and any other unsuitable conditions all during construction.
- B. Protect Owner's property during installation of work.
- C. Repair or replace, to the satisfaction of and at no expense to the Owner, new or existing materials, equipment, or property which, in the Owner's Representative's judgment, has been damaged as a result of this work.
- D. Replace any fiberglass insulation material which becomes wet at any time during construction or system start-up.

1.13 SCHEDULE OF WORK AND WORK SEQUENCING

- A. In accordance with Section 01310 – Contract Schedules.
- B. Work shall be completed in a sequence that shall minimize shutdowns and disruption of mechanical and plumbing services. Shutdown of mechanical and plumbing systems that serve occupied areas shall only occur at designated times approved by the Owner's Representative. Once new systems are put into service, provide all labor and materials to operate new mechanical systems for the Owner's use until the entire project is complete.
- C. Whenever the sequence of work requires demolition, cutting and capping of existing ducts, or connection of new ductwork to existing systems that will affect airflows outside the project area, submit proposed duct modifications, intermediate air balancing procedures, and all related life safety measures necessary to maintain existing airflows, pressure relationships, and required life safety protection in affected areas outside of the project area. This submittal shall be approved prior to shutdowns for cutting, capping, and new connections.
- D. Maintain utilities to occupied areas of the facility at all times. Schedule demolition and new work that affects services to occupied areas to minimize disruption, regardless of phase or construction boundaries.

- E. In scheduling, anticipate means of installing equipment through available paths and openings in structure.

1.14 PROJECT CLOSEOUT

- A. In accordance with Section 01700 – Project Closeout.
- B. Mechanical Closeout Activities: Create a complete list of mechanical closeout activities for this project, some of which may be part of project startup requirements. Include these activities on the project master schedule. Many of these activities need to be performed at the end of each major construction phase. Following are typical activities to be included in this list, with references to locations in the technical specifications:
 - 1. Verification of as-built drawing accuracy (230000-1.6O.2.a)
 - 2. Owner familiarization tour (230000-3.9A).
 - 3. Owner training (230000-3.9B).
 - 4. Disinfection of domestic and industrial water systems (221000-3.5).
 - 5. Cleaning of new plumbing fixtures (221900-3.2C).
 - 6. Air balance checking (239900-3.6).
- C. Mechanical Closeout Submittals: Create a complete list of mechanical closeout submittals for this project. Include these submittals on the master submittal schedule. Many of these activities need to be performed at the end of each major construction phase. Following are typical items to be included in this list, with references to locations in the technical specifications. Items preceded with an asterisk (*) indicates that the item needs to be individually submitted for review by the Owner's Representative. Items without an asterisk indicates that individual submittal and review are not required, and that the item only needs to be included in the project closeout documentation package.
 - 1. * Operating and maintenance manuals (230000-1.6N).
 - 2. * As-built record drawings (230000-1.6O).
 - 3. Responses to Owner's Representatives observation and punchlist comments that require corrective action (230000-3.6D)
 - 4. After all work is complete and prior to Final Acceptance, submit Letters of Certification (230000-3.10C).
 - 5. Contractor's material and test certificate for new fire sprinkler piping (212800-3.3B).
 - 6. Certification of domestic water disinfection (221000-3.5E).
 - 7. Verification of plumbing and fire protection pipe pressure testing (221000-3.6D).
 - 8. * Final test and balance report (239900-1.4E).
 - 9. * Pre-balance preparation report (239900-3.2K).

- D. Provide mechanical system checking, start-up, testing, adjusting, balancing, fine-tuning, and troubleshooting as necessary to provide systems in perfect operating condition with optimum performance. Prepare and perform step-by-step testing procedures to validate the functionality and accuracy of each control sequence. Testing procedures shall include resetting of setpoints and parameters, manipulation of sensor inputs, initiation of failure modes, and creation of other operating conditions necessary to demonstrate system response to increasing and decreasing variables and alarm conditions.

1.15 UTILITY CONNECTIONS

- A. In accordance with Section 01510 - Temporary Facilities and Utilities.
- B. Arrange and pay for all temporary utilities necessary for execution of the work including, but not limited to, connections to on-site utility mains and feeders.

1.16 GUARANTEE

- A. At completion, furnish the Owner's Representative with a written guarantee that the work has been performed in accordance with the Drawings and Specifications and to replace or repair, to the satisfaction and at no expense to the Owner, any portion of the work that fails within a period of one (1) year following Final Acceptance of the entire project, provided that such failure is due to defects in material or workmanship.
- B. Other terms and conditions and guarantee format in accordance with Section 01740 – Guarantees, Warranties, Bonds, Service and Maintenance.
- C. Provide separate written guarantees where extended guarantee periods or special guarantee provisions are specifically required in subsequent Sections of Divisions 21, 22, and 23. Include copies of all extended guarantees in Operating and Maintenance Manuals.
- D. Guarantee that new and modified mechanical systems will operate without objectionable noise, vibration, or uncontrolled expansion.
- E. Unless shorter response times are indicated in subsequent sections, take investigative and/or corrective action in response to all warranty related calls within 24 hours of notification. See provisions of Paragraph 1.05C, hereinbefore.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials and equipment shall be products of a manufacturer regularly engaged in the manufacture of such products. All items of a given type shall be the product of the same manufacturer. Manufacturer's products submitted for this project (exclusive of custom features specified herein) shall have been in satisfactory commercial or industrial use in continuously operating systems for at least three (3) years prior to Bid Deadline. Exceptions to this requirement shall only be granted at the Owner's Representative's discretion and must be approved in writing.
- B. Identify all materials and equipment by manufacturer's name, with appropriate physical or nameplate data. Remove unidentified materials or equipment from site.
- C. Equipment specified by manufacturer's model number shall include all accessories, controls, etc., listed in catalog as standard with equipment, except where optional or custom materials or accessories are specified.
- D. Provide new products and materials, the best of their respective kinds, free from all defects, and of the make, type and quality herein specified and approved by the Owner's Representative. Where no specific make of material or equipment is mentioned, any first-class product of a reputable manufacturer may be used, provided it conforms to requirements of the system, is the most appropriate product for the particular application, and is acceptable to the Owner's Representative.
- E. Service Support: Major equipment items shall be supported by service organizations. Submit a list of qualified permanent service organizations for support of major equipment items, including their addresses and qualifications. Service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the Contract.
- F. Equipment or material damaged during transportation, installation, or operation is considered as totally damaged. Replace with new. Variance shall only be granted at the Owner's discretion and must be approved in writing.
- G. Check all materials prior to installation for conformance with Drawings and Specifications. Do not install materials which are not as specified or have not been reviewed by the Owner's Representative.
- H. Materials and equipment shall be as specified in the respective Sections of Divisions 21, 22, and 23 and as shown on the Drawings.

2.2 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. In accordance with Section 01640 - Product Options and Substitutions.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install work in accordance with reviewed shop drawings and other Contract requirements after all exceptions have been cleared and the proposed installation has been coordinated with existing conditions and other work. Verify all elevations and measurements prior to installation of materials.
- B. Manufacturers' Instructions: Obtain and follow manufacturers' installation instructions in all cases. Where Contract Documents call for support, isolation, or other installation requirements which differ from printed manufacturers' instructions, then the more stringent requirements apply. Where manufacturers' instructions deviate significantly from or conflict with requirements of the Contract Documents, submit to the Owner's Representative for clarification prior to installing the work.
- C. Provide all staging, temporary storage, lifts, scaffolding, formwork, framing, temporary equipment, and other material and labor necessary to install new materials and equipment.
- D. Equipment: Accurately set and level equipment with supports and seismic restraints neatly placed and properly fastened. No allowance of any kind will be made for neglect on part of Contractor to foresee means of bringing in or installing equipment into position inside building.
- E. Piping and Ductwork Systems:
 - 1. Work into complete, integrated arrangements with like elements to make work accessible and neat in appearance.
 - 2. Run concealed, except where shown or noted otherwise. Where exposed, install work parallel with walls or structural elements; vertical runs plumb; horizontal runs level or uniformly pitched as appropriate and parallel with structure.
 - 3. Install with adequate passageways free from obstructions, as high as practicable to preserve head room. Notify Owner's Representative before installation whenever head room of less than seven (7) feet will result. Coordinate work to achieve proper head room as required.
 - 4. Provide all necessary support framework and backings, hangers, supports, and seismic restraints for materials and equipment.
 - 5. Cleaning and Closing: Inspect all piping, ductwork and equipment before placing; clean interior before closing. Close all piping and ductwork at end of each day's work. Keep duct openings sealed with visqueen at all times during storage at the site and after installation. Shop clean and cover supply, return, and acoustically lined exhaust ductwork as specified hereinafter.
 - 6. Project Area Ventilation and Protection of Air Inlets:
 - a. Shut off existing exhaust airflow in project area and seal air inlets airtight. Maintain adequate ventilation and negative pressure in the project area using filtered negative air machines continuously exhausting directly to the outside.

- 1) For project areas without openings to the outside, provide sufficient negative air machines to maintain a minimum negative pressure of 0.05-inch W.G. to all adjacent non-project areas and a minimum velocity of 100 feet per minute through open doorways into the construction area (one door open at a time). Provide Magnehelic air filter gauges, 0-to-0.25-inch W.G. range, across each doorway into project area; mount gauge on project side of wall.
- b. Where existing exhaust system must be kept in operation during construction, keep every exhaust air inlet in the project area tightly covered with minimum 1-inch-thick polyester filter media with dirt-retaining tackifier additive, rated for 70-80% arrestance per ASHRAE Standard 52.2-2007. Replace media as it discolors or becomes coated with dust. If adequate protection is not maintained, causing dust to enter the exhaust duct system, then Contractor shall pay the entire cost of cleaning the exhaust duct system from the project area to the exhaust fan. Owner's costs related to duct cleaning resulting from Contractor's failure to protect air inlets shall be deducted from the Contract Sum.

F. Access to Valves and Equipment:

1. Arrange the work to make access possible to all valves, dampers, expansion joints, fire dampers, motors, filters, control devices, instrumentation and other products requiring access for servicing, adjustment, repairs, replacement or maintenance. Access to all existing devices shall be maintained. Provide all necessary ceiling access openings and access panels in walls and ceilings to effect reasonable access.
 - a. Wherever reasonable access is not provided, in the opinion of the Owner's Representative, then relocate valves, dampers, fire damper actuators, motors, filters, control devices, instrumentation and other work as directed by the Owner's Representative, with no additional cost to the Owner.
2. Normal operations such as operating valves, cleaning strainers, servicing or replacing equipment and control devices, draining and venting hydronic systems, replacement of filters, lubrication of bearings, etc., shall be able to be performed safely while standing on a floor or ladder.
3. Group concealed valves, dampers, controls and equipment requiring service access, such as heating coil control valve assemblies, so as to be freely accessible through a minimum number of ceiling tiles or access doors. Keep ceiling access openings clear of piping, conduits, wires, bracing, supports, etc. that might inhibit access.
 - a. Wherever clear ceiling or wall access openings are not provided, in the opinion of the Owner's Representative, then provide additional access opening or relocate piping and controllers to acceptable locations, with no additional cost to the Owner.

4. Coordinate locations of ceiling access tiles in acoustic ceilings, access doors in hard ceilings, and access doors in walls with applicable trades installing these openings. Where access doors in walls or ceilings are not allowed, then relocate valves, controls, and other devices to areas which can be adequately accessed. Do not permit the installation of miscellaneous conduits, cables, sprinkler piping, ceiling support channels, and other work that might inhibit service access at all ceiling access openings. Maintain and continuously update a set of Reflected Ceiling Plans at the jobsite with all required ceiling access openings identified.
- G. Connection to Existing Ductwork and Piping: Work under this Contract requires connection to existing ductwork and piping. The intent of this Contract is that there is an existing duct or pipe of proper size and type existing in, or near, the locations shown, unless otherwise indicated. The Contract Documents do not purport to guarantee that there is an exact size and location of ductwork or piping to provide an immediate connection to whatever device is specified to be attached to the existing ductwork or piping. Provide all necessary new ductwork or piping, revisions to existing ductwork, piping, fittings, dampers, valves, air reliefs, and appurtenances as may be required to accommodate the installed device or new connection in a neat and satisfactory manner.
- H. Disconnection of Existing Piping: Trace existing piping to mains to locate isolation valves and points of disconnection. Coordinate points of disconnection and system shutdowns with the Owner's Representative. Unless otherwise directed, remove all piping no longer in service back to the nearest active main. If isolation valves do not exist at branch connections to mains, then provide capped isolation valves wherever water and gas piping is demolished.
- I. Floor, Wall, Roof and Ceiling Openings: Coordinate exact locations of all openings, chases, furred spaces, and service access and pathways.
1. Temporary sleeves, if used to form openings, shall be removed prior to installation of permanent materials.
 2. Sleeves are prohibited in structural members, except where approved in writing or specifically noted on Drawings. For core drilled holes, size and location shall be reviewed and approved by Owner's Representative prior to execution. See paragraph 1.08C.3 herein before.
 3. Submit product data and installation details for all penetrations of building structure. Submittal shall include schedule indicating penetrating materials, (metal pipe, plastic pipe, conduit, etc.), sizes of each, opening sizes and sealant products intended for use.
 4. Seal all openings in fire rated assemblies in accordance with Section 078413 – Penetration Fireproofing.
 5. Submit complete penetration layout drawings showing openings in building members, floor or roof slabs, bearing walls, shear walls, etc. Indicate and locate, by dimension, all required openings.
 6. Openings for pipes shall be minimum 1" larger in diameter than pipe, or where fire resistant penetrations are required, sized in accordance with listing requirements of the firestopping systems.

7. Openings for insulated piping shall be sized based on outside diameter of insulation, except where insulation is specified or detailed to be discontinuous through opening.
8. Openings for duct penetrations shall be no more than 1/2" larger on all sides than size of duct or insulation, if applicable. Openings for ducts with fire dampers shall be in accordance with fire damper installation requirements.
9. All floor penetrations shall be considered two-hour fire-rate separations.
10. Seal non-rated wall penetrations. Where not noted or detailed, seal pipe, conduit and duct penetrations through full height non-rated walls airtight using non-hardening acoustic sealant. Do not permit direct contact between sheet metal ducts and wall construction (gyp board or framing). Fill annular space with non-hardening acoustic sealant.
11. Finish and trim penetrations as shown on details and as specified hereinafter.
12. Provide chrome or nickel plated escutcheons where piping passes through walls, floors or ceilings and is exposed in finished areas. Size escutcheons to fit pipe and pipe covering for finished appearance. Finished areas shall include mechanical/electrical rooms, janitors' closets, storage rooms, interstitial spaces, etc.
13. Trim duct penetrations exposed in finished areas with 1" wide galvanized trim collars properly sized to fit duct. Collars shall be same gauge as duct, prime finish unless noted otherwise.

J. Cutting and Patching:

1. Provide all cutting, patching and repairing, including structural reinforcing, necessary for work.
2. Do no cutting or patching without Owner's Representative's review. Repair damage done by this cutting equal to original condition in Owner's Representative's opinion.
3. All cutting and patching shall comply with requirements of Section 01070 – Demolition, Cutting and Patching. Cutting of existing concrete shall comply with requirements on Structural or Architectural Drawings and Specifications.

K. Noise Control: Control of noise and vibration during construction is of utmost importance.

L. HVAC Controls Coordination: Install control valves and insertion wells in piping, provide access, equipment start-up, tests, inspections, and other preparation necessary for installation and functional testing of HVAC controls.

3.2 DEMOLITION

A. In accordance with Section 01070 – Demolition, Cutting and Patching, 024119 – Selective Demolition, and the following.

- B. Perform demolition work as shown on Mechanical and Plumbing Drawings and as necessary to allow installation of new work. Information shown on the Drawings is based on existing design drawings and limited field observation. Not all existing conditions are shown on the Drawings. Existing conditions are not necessarily shown in exact locations. Verify actual conditions in the field. Perform demolition not shown on the Drawings or shown differently than actual conditions as necessary to allow installation of new work, at no additional cost to the Owner. Intent is to remove all existing mechanical work in or adjacent to the project area which will no longer be in use. If discovered conditions differ significantly from conditions shown such that the extent of demolition is not clear, then inform the Owner's Representative of such conditions before proceeding.
- C. Any demolition that will interrupt existing services to other floors or areas must not be done until after new ductwork, piping and/or controls serving these areas is prefabricated, installed to the extent possible, cleaned, tested, and ready for final connection.
 - 1. Existing systems serving occupied areas shall remain operational at all times except for scheduled shutdowns of short duration; see Paragraph 1.10 hereinbefore.
 - 2. Whenever demolition during a phase affects operation in an occupied area, and new utilities are not scheduled for installation until a later phase, provide all necessary temporary piping, ductwork, balancing and controls to keep occupied areas fully operational.
 - 3. Maintain existing airflows outside of the project area; see Paragraph 1.13C hereinbefore.
- D. Fill all abandoned floor slab penetrations full depth in accordance with details on Architectural and Structural Drawings. Finish flush with existing slab. All floor slabs are two-hour rated separations.
- E. Trace existing piping to be removed and cap at mains or risers. Remove abandoned domestic water piping to the nearest active branch or main. Advise Owner's Representative of any shutdowns required.
- F. Provide new hangers for existing piping and ductwork which will remain after existing supporting partitions or ceiling framing are removed.
- G. Perform all pre-demolition airflow measurements specified herein or called for on the Drawings prior to demolition.
- H. All materials used for temporary barriers, supports, and enclosures shall conform to requirements of Division 01.
- I. Wherever existing piping is cut and shall remain in service, provide specified threaded or flanged caps for pressure piping, and pressure-tight no-hub caps for no-hub systems. Provide isolation valves at the end of all abandoned pressure piping with specified valve tags, whether shown on the Drawings or not.

- J. Wherever existing ductwork is cut and shall remain in service, provide minimum 20 gauge cover plates over duct openings, set in a bed of mastic sealant, and secured with No. 10 sheet metal screws maximum 4 inches on center.

3.3 SIGNS, LABELS, AND IDENTIFICATION FOR PIPING AND VALVES

A. Signs and Labels:

1. For all new and existing heating and cooling coils, fire smoke dampers, isolation valves, drain valves, air vents, and control devices located above ceilings, affix a printed label to T-bars, using 3/16-inch black lettering on clear laminated self-adhering background tape, indicating equipment located above adjacent ceiling tile. Separate labels are not required for air vents, drains, and valves at heating coil valve assemblies. Provide an upward pointing arrow on the label and orient label so that the arrow points toward the removable ceiling tile. There shall be no fingerprints or smudges on T-bar labels.
 - a. For spline type ceilings or access doors in hard ceilings, affix sign onto appropriate ceiling tile or access door.
 - b. Submit sample text for signs and modify as directed.
 - c. Use a Brother P-Touch, Seton, or equal, laminated label printer. Provide a Brother P-Touch PT-E500, or equal, labeling machine with an AC adapter and minimum of 200 feet of waterproof, scratchproof, laminated tape for use on this project. Turn over to Owner at end of project.
2. Ceiling Access Coordination during Construction: As soon as ceiling grid is installed, temporarily tape 8.5" x 11" sheets of paper on the T-bar grid at all locations that require access. Sheets shall have the letter "A" bold and 4-inches high in the center and the following text in minimum 1/4-inch high letting: "CEILING ACCESS LOCATION. DO NOT INSTALL SPRINKLER PIPING, FIRE ALARM DEVICES, CONDUITS, CABLES, JUNCTION BOXES, CEILING SUPPORT CHANNELS, OR OTHER WORK THAT COULD OBSTRUCT ABOVE-CEILING ACCESS AT THIS LOCATION. INSTALL CEILING TILE TO BE EASILY REMOVABLE". Relocate and provide additional sheets as appropriate as the work progresses.
 - a. Keep ceiling access openings clear of miscellaneous piping, conduits, cables, ceiling support wires, channels, and other material that might inhibit access to equipment, valves, controllers, panels, actuators, and other devices that require periodic inspection and service.
3. Label each piece of equipment.
4. Provide heavy "Hazard Warning Tape" with permanent adhesive backing on all exposed edges below 80 inches above any finished floor in mechanical room aisle ways and other occupiable areas.

B. Pipe Identification:

1. Identify and color-code all piping, including concealed piping. Provide directional arrows on circulating systems. Provide identification in accordance with ANSI 13.1-2007, "Scheme for Identification of Piping Systems," and OSHA.
 - a. Identify all existing pipe in the Project area exposed during construction. Replace labels that have in appropriate wording or are inadequately spaced with new labels as specified herein.
 - b. Identification shall consist of stenciled letters for piping in mechanical equipment rooms and outside, and plastic markers elsewhere.
2. Stenciling: Use industrial grade weatherproof alkyd enamel paint, color: white or black, to match existing. Legend and minimum lettering height per ANSI 13.1, with flow arrows. Provide identification on two sides of pipe oriented toward most common points of observation. Lettering shall be sharp and legible. Clean off any overspray around stenciling. If pipe is dark colored, then paint entire circumference of pipe white prior to stenciling. Paint shall meet requirements below.
3. Plastic Markers: Seton Set-Mark "Snap-Around Markers," Brady, Calpico, or equal, with stainless steel spring fasteners for larger sizes. Each marker must show approved color-coded background, proper color of legend in relation to background color, approved legend letter size, approved marker length, and flow direction.
 - a. For uninsulated 1/2-inch diameter pipes, use self-adhesive wraparound markers, Seton Ultra-Mark, Brady, or equal.
4. Locations for Pipe Identification:
 - a. Adjacent to each valve, including vent and drain valves.
 - b. At each branch and riser take-off.
 - c. At each pipe passage through wall, floor, and ceiling construction, on both sides of penetration.
 - d. On all horizontal runs spaced 25-feet maximum.
 - e. Labels must be as conspicuous as possible from normal points of reference, except where labels would detract from finished areas. Where pipes are located above normal line of vision, the label(s) shall be placed below the horizontal center line of the pipe; where pipes are below normal line of vision, place labels above the horizontal center line of the pipe.
5. Paint for Stenciling: Non-fading, non-water soluble, and durable. Use Use Kelly-Moore #405 low-VOC aliphatic polyurethane, Sherwin-Williams, Glidden, or equal. Prepare pipe for painting in accordance with manufacturer's instructions and requirements in Section 099123 – Exterior Painting.
6. Minimum Letter Height:

Pipe or Insulation O.D.	Letter Height	Minimum Length of Color Field
3/8 to 1-3/8 inches	1/2 inch	8 inches

Pipe or Insulation O.D.	Letter Height	Minimum Length of Color Field
1-1/2 to 2-3/8 inches	3/4 inch	8 inches
2-1/2 to 7-7/8 inches	1-1/4 inches	12 inches

C. Valve Identification:

1. Provide tags on all control and line shutoff valves, including existing valves in the project area that lack identification tags. Use minimum two (2)-inch by four (4)-inch laminated plastic (ASTM D709, Type 1, Phenolic-resin-laminate engraving stock) tags with engraved lettering. Provide white tags with blue or black lettering for all services, except special gases which shall be color coded as described above fire protection valves which shall have red tags with white lettering. Tags shall state the system served by the valve, valve size, the coil, room number(s) and/or area of the building served by the valve, whether the valve is normally open (N.O.) or normally closed (N.C.), and purpose of the valve. Control valve tags shall state the manufacturer and complete model number of the valve and actuator, whether the actuator is Direct Acting or Reverse Acting, water flow rate (gpm) or steam flow rate (lbs./hr.), valve size, equipment or coil served, and valve flow coefficient. Circuit balancing valve tags shall state the valve manufacturer and model number, balanced water flow rate, date installed, and the note. "Use calibrated flow charts furnished for this valve."
 - a. Do not provide valve tags for isolation valves across zone heating coils, multi-section coils, and individual isolation valves at low point drains, manual air vents, and pressure gauges. Identify piping within sight of all of the above shutoff valves.
 - b. Provide valve tags as specified herein for all existing valves to remain in the project area.
2. Secure valve tags to pipe or valve stem with light brass chains. Valve tags for exposed fire protection valves may be attached to the wall near the valve.
3. Provide red nylon flagging on piping adjacent to all new and existing valves above ceilings, tied to piping, and extending loosely down to top of finished ceiling.

3.4 TESTING

- A. Provide all labor, material, equipment, and temporary connections required to accomplish tests specified herein and as required by authorities having jurisdiction.
 1. Fully coordinate the readiness, completeness, and safety of controls and electrical power systems before starting tests.
 2. Perform tests in accordance with requirements of governing codes and regulations and under supervision of authorities having jurisdiction, where applicable.

3. When testing is to be witnessed by the Owner's Representative or Project Inspector, notify them at least 10 days prior to testing date.
 4. Furnish a written report documenting procedures and results and certification that each test has been satisfactorily completed. Certification shall include identification of portion of system tested, date, time, test criteria, test medium and pressure used, duration of test and name and title of person signing test certification document.
 5. Maintain copies of certified test results, including those for any failed tests, at project site. At completion of project, include copies of test records and certifications in O&M manuals.
- B. Clean and purge equipment and piping before each test.
 - C. Test various mechanical systems in portions as work progresses. Any system or portion previously tested shall become part of any repeated test when it becomes part of distribution of collection system.
 - D. If piping leaks, then retighten joints to make piping pressure tight. If ductwork leaks, then seal with specified sheet metal, sealant, and fasteners. It is not acceptable to use patching compound or other leak-stop products. If leaks cannot be stopped by conventional means, then remake piping or ductwork in accordance with specification requirements.
 - E. Repair or replace work that does not perform as required, or work damaged due to tests, to the satisfaction of and at no additional cost to the Owner.
 - F. Immediately retest any equipment, material, or system which, in the Owner's Representative's opinion, failed to function properly or was inadequately tested.

3.5 BALANCING REQUIREMENTS

- A. Complete and test all systems early enough to enable completion of balancing prior to acceptance. Allow sufficient time for system balancing as coordinated with the Test and Balance Agency. Advise the Owner's Representative in writing when all systems have been completed and tested and are ready for balancing.
- B. Perform all prebalance preparation activities specified in Section 239900-3.2.
- C. Provide replacement fan sheaves as recommended by the Test and Balance Agency during final system balancing.
- D. Provide black painted blank-off plates behind ceiling diffusers, throw reducing vanes, or vane adjustments as recommended by the Test and Balance Agency to prevent drafts at the occupant level in spaces.

3.6 INSPECTIONS AND OWNER'S REPRESENTATIVE'S SITE VISITS

- A. No work shall be covered up or enclosed until it has been observed, tested, and approved by the Owner's Representatives, inspectors, and authorities having jurisdiction over the work.
- B. Owner's Representatives will periodically visit the site for construction progress meetings and/or to observe the condition of the work. Alert the Owner's Representative at the following milestones and request observation of installed work:
 - 1. When system rough-in has begun and sufficient work is installed to observe that materials and execution are in accordance with contract requirements.
 - 2. When system rough-in is nearly complete, prior to insulating or concealing work.
 - 3. When issues arise that cannot be resolved by normal means (RFIs, OAC meetings, etc.) and require specific observations to resolve spatial conflicts or product issues.
- C. Near the completion of work for each phase, Owner's Representative in each discipline shall make one punch list site visit to observe substantially completed work. Inform the Owner's Representative at least two weeks in advance of times when the work will be available for such observation. Make all provisions necessary so that all of the work is fully visible to persons on the floor or standing on a ladder. All piping, valves, coils, dampers, and control devices shall be visible and clearly identified.
 - 1. If any portion of the work is not easily accessible or identifiable, causing the Owner's Representative to make additional site visits, or if problems identified are substantial enough, in the opinion of the Owner's Representative, to require follow-up site visits, then reimburse the Owner for all costs associated with additional site visits and inspections. Owner's costs for additional subconsultant site visits and inspections shall be deducted from the Contract Amount.
- D. Respond in writing to each written comment by the Owner's Representative, Project Inspector, and Owner's subconsultant relating to incomplete or deficient work, including comments regarding work in progress. Create a spreadsheet on which Field Report items requiring corrective actions are tracked. Restate each comment, date received, corrective action taken, date completed, and resulting condition. Include space for the Project Inspector to sign off on completed items.
 - 1. Inspector of Record shall review on all corrective actions taken in response to comments relating to incomplete or deficient work, and report on the completion status of each.

3.7 CLEANING

- A. Thoroughly clean all equipment, piping, and all other materials free from all rust, scale, and other dirt before covering or painting is done.
- B. Keep new and existing drain piping clean all through construction.

- C. Ensure that new ductwork have been cleaned inside and out before ceilings are installed and before fans are operated.
- D. Keep the premises free from accumulation of waste material and debris at all times. At the completion of the project, remove refuse from within and around the building, all tools, scaffolding, and surplus materials, leaving the site of the work completely clean.
- E. Wherever work is performed above ceilings which are to remain, protect floor areas below from all dust and debris. Wherever the ceiling is opened, vacuum clean top of ceiling, ducts, and pipes within four (4) feet of the opening. Comply with requirements of Division 01 and General Conditions for work in clean areas.
- F. Completely cover all plumbing fixtures, electronics, and moving machinery to keep free of dirt and water during construction. Effectively cap all openings into ducts and pipes to keep foreign matter out during construction.
- G. After installation is complete, clean all systems:
 - 1. Clean piping and ductwork both internally and externally to remove dirt, dust or other foreign materials. When external surfaces of piping are rusted, clean and restore surface to original condition.
 - 2. Clean pipeline strainers to restore them to original condition or replace with new strainer elements.
 - 3. All foreign matter shall be blown and/or cleaned from coils, terminal devices, diffusers, registers and grilles.
 - 4. Thoroughly clean equipment of stains, paint spots, dirt and dust. Remove temporary labels not used for instruction or operation.
 - 5. Provide additional cleaning of individual piping systems and apparatus as hereinafter specified.

3.8 START UP

- A. All systems and equipment shall be started, tested, adjusted and turned over to the Owner ready for operation. Follow manufacturers' pre-start-up check-out, start-up, trouble shooting and adjustment procedures. Provide services of technician/mechanic knowledgeable in start-up and check-out of types of systems and equipment on project. Provide start-up services by manufacturer's representatives where specified or where Contractor does not have qualified personnel.

3.9 OWNER TRAINING

- A. Familiarization Tours: During the course of construction, before ceilings are closed, provide familiarization tours for Owner's building maintenance personnel to acquaint them with new HVAC and plumbing work and equipment locations.
- B. After completion of system commissioning procedures, fully instruct the Owner's personnel in the operation, adjustment, and maintenance of mechanical equipment and systems.

1. Submit (3) copies of a certificate, signed by Owner's Representative, attesting to their having been instructed, and that instruction were satisfactory.

3.10 FINAL ACCEPTANCE

- A. Final acceptance of the work shall not occur until certified air and water balance reports are submitted and the entire installation checked with the Specifications and Drawings to ensure that work is in conformance.
- B. Prior to final acceptance, properly correct and respond to all deficient items mentioned in routine observation and punch list comments. Obtain written acceptance from the Owner's Representative for corrective actions taken.
- C. After all work is complete, submit a Letter of Certification that HVAC, plumbing, fire protection, and all other mechanical work has been completed, is ready for normal operation, and is installed in accordance with the Contract Documents. Include names, addresses, and phone numbers of firms and individuals to be contacted for first year warranty and commissioning activities specified under Paragraph 230000-1.5C, hereinbefore.

END OF SECTION 23 00 00

SECTION 23 02 00

SUPPORTS, ANCHORS, AND SEISMIC RESTRAINTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Includes: All labor, materials, and equipment to furnish and install complete support, anchorage, and seismic restraint systems for piping, ductwork and equipment in conformity with applicable codes and authorities having jurisdiction.
 - 1. Materials and methods specified herein are common to all Sections of Divisions 21, 22, and 23 and are applicable to all related work in other Sections of Divisions 21, 22, and 23.
- B. Related Work: Coordinate and comply with requirements of the following:
 - 1. Section 05 50 00 - Metal Fabrications.
 - 2. Details and requirements on Structural Drawings.

1.2 REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

- A. In accordance with Section 23 00 00 - General Mechanical Requirements.
- B. Other Reference Standards:
 - 1. CCR, Title 24.
 - 2. NFPA 13, Standards for Installation of Sprinkler Systems.

1.3 QUALITY ASSURANCE

- A. In accordance with Section 230000 - General Mechanical Requirements.
- B. Perform shop and/or field welding in strict accordance with Title 24, CCR, with pertinent recommendations of the American Welding Society (AWS).
- C. All field and shop welding shall be inspected by the Testing Agency in accordance with Title 24, CCR.
- D. Testing: Testing laboratory shall test expansion bolts in accordance with requirements on Architectural Drawing A7.1.

1.4 SUBMITTALS

- A. Submit product data, shop drawings, and samples in accordance with Section 23 00 00 - General Mechanical General Requirements - Part 1.

- B. Product Options and Substitutions: In accordance with Section 01 25 00 – Substitution Procedures.
- C. Submit test reports and certifications in accordance with Section 23 00 00 - General Mechanical Requirements - Part 3.
- D. Submit separate shop drawings indicating pipe support and bracing point loads and structural attachments for pipes over six (6)-inch size. Where Structural Engineer-of-Record indicates that point loads are excessive, relocate attachment or furnish additional supports until point loads are acceptable.
- E. Submit separate shop drawings showing exact locations and types (transverse, longitudinal, etc.) of seismic bracing for piping. Shop drawings shall reference details on structural drawings.

1.5 DESIGN CRITERIA

- A. Materials and application of pipe hangers and supports shall conform to latest requirements of ANSI/ASME Code for Pressure Piping B31.1 and MSS Standard Practice SP-58 (Materials, Design and Manufacture), SP-69 (Selection and Application), and SP-89 (Fabrication and Installation), except as supplemented or modified herein.
- B. Unless otherwise indicated, design structural support members and support devices including couplings, rods, trapeze supports and strut systems with safety factor in accordance with AISC Manual of Steel Construction, but not less than 2.0.
- C. Maximum deflection determined by the following equation shall be used.

$$D = \frac{H \text{ or } L}{250}$$

250

Where D = Maximum deflection in Inches

H = Member height in Inches

L = Member length in Inches

- D. Unless otherwise indicated, fasteners, hangers, support devices and hardware shall be galvanized or cadmium plated steel or stainless steel.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Concrete Expansion Anchors:
 - 1. Hilti Fastening Systems.
 - 2. Simpson.

3. Or equal.

B. Hangers and Attachments:

1. Cooper B-Line Systems, Inc.
2. Piping Technology and Products (PT&P).
3. Unistrut.
4. Or equal.

C. Seismic Restraint Systems: Contractor fabricated in accordance with details on structural drawings.

2.2 PIPE HANGERS AND SUPPORTS

A. General: Products shall be Cooper B-Line, PT&P, Unistrut, or equal. Indicated model numbers are Cooper B-Line, unless otherwise noted. Products shall be electroplated except where hot-dip galvanizing or stainless steel is specified or noted on the Drawings.

B. Individual Pipe Hangers:

1. Pipes Up Through Two (4)-inch Size (Maximum 140-degrees F Service): Clevis hanger, Fig. B3100. Provide B3100F felt lined hangers for uninsulated pipes.

C. Multiple Pipe Trapeze Hangers:

1. Factory Channel Trapeze, minimum 12 gauge:
 - a. For Pipes Two (2)-Inch Size and Smaller: 1-5/8-inch section, Fig. B22. Slotted channels are not acceptable. Hole punched channels are acceptable.
 - b. For Pipes Larger than Two (2)-Inch Size and at Seismic Braces: 3-1/4-inch double section, Fig. B22A.
 - c. For horizontal pipes secured to horizontal channels, use B2000 or B2400 Series pipe clamps; use B2400 for pipes 4" and larger. For horizontal piping secured to vertical channels, use B2400 Series standard pipe straps with bolts equal to strap bolt hole size.

D. Thermal Hanger Shields: Pipe Shields Inc., Insul-Coustic Corp., or equal, waterproofed asbestos-free calcium silicate insert with galvanized metal shield.

1. 360 Degree Insert: Calcium silicate, 100 psi minimum compressive strength, $K=0.38$ Btu/sq. ft./inch/degree Fahrenheit, same thickness as adjoining pipe insulation.
2. Galvanized Sheet Metal Shield Indoors:

Pipe Size

Minimum Shield
Length

Minimum
Gauge

1/2 to 1-1/2 inches	4 inches	24
2 to 6 inches	6 inches	20
8 to 10 inches	9 inches	16

3. Insert shall extend one (1) inch beyond sheet metal shield on chilled water pipes.
4. Insulated pipe supports shall be manufactured products with published load ratings with a minimum 3 to 1 safety factor.
5. Furnish models in accordance with the following table (model numbers are Shaw Pipe Shields, Inc.):

<u>Pipe Size</u>	<u>Trapeze Hangers</u>	<u>Clevis Hangers</u>
1/2 to 2 inches	A1000/A2000	A1000/A2000
2-1/2 to 4 inches	A5000/A6000	A9000
5 to 14 inches	A7200	A9200

6. Vertical Support: Model E1000 insulated riser clamp.

E. Resilient Isolators:

1. For uninsulated copper pipes on factory channels: Cooper B-Line BVT Series Vibraclamps, ZSI Cush-a-Clamp, or equal.
2. For uninsulated copper pipes within stud walls: LSP P-6100 Series, P6-200 Series, P-6300 Series Acousto-Plumb System, or equal.

- F. Sprinkler Piping: Comply with additional requirements in Section 21 28 00 - Fire Protection System.

2.3 DUCT HANGERS AND SUPPORTS

- A. In accordance with details on Sheet M0.1 and requirements in Section 23 85 00 - Ductwork.

2.4 SEISMIC RESTRAINT FOR PIPING AND DUCTWORK

- A. Submit complete details of seismic restraints to be used on this project.
- B. There is no ductwork of the sizes requiring seismic restraints on this project.

2.5 ATTACHMENTS TO STRUCTURE

- A. Concrete Expansion Bolts and Other Fasteners: In accordance with requirements on Sheet A7.1. Size to match hanger rods unless otherwise noted or required.
 - 1. Unless otherwise noted, provide Hilti KB TZ (ESR-1917), or equal, stud type wedge anchors, standard embedment, thread length as necessary.
- B. Beam Clamps: Heavy duty type, bottom flange attachment, Cooper B-Line B3054, PT&P, or equal with lock-nut, set-screw, and safety strap. Limited to pipes up to 4-inch size and hanger rods up to 5/8-inch diameter. Beam clamp load rating shall be equivalent to hanger rod load rating.
- C. Welded Beam Attachments: Cooper B-Line B3083, PT&P, or equal.
- D. Hanger Rods: ASTM A107 hot-rolled steel, ANSI B1.1 threads, with minimum safety factor of 5 over imposed load. Cooper B-Line, PT&P, or equal.
- E. Hanger Rod Attachments:
 - 1. Turnbuckles: Cooper B-Line B3202, PT&P, or equal.
 - 2. Linked Eye Rod: Cooper B-Line B3211, PT&P, or equal.
 - 3. Clevis: Cooper B-Line B3201, PT&P, or equal.

2.6 MISCELLANEOUS METAL AND HARDWARE

- A. In accordance with Section 05 50 00 - Metal Fabrications, and the following.
- B. Steel Plate, Shapes, and Bars: ASTM A36.
- C. Steel Plates, Bent or Cold Formed: ASTM A283, Grade C.
- D. Steel Channel Strut System: ASTM A570 GR33, A446 GRA; electroplated finish required indoors, except where stainless steel, epoxy finished, or hot-dip galvanized per ASTM A123 or A153 are noted or specified for corrosion protection. Channels shall not be lighter than 12 gauge. Slotted channels are not acceptable. Slotted channels are not permitted for seismic restraints. Hole punched channels are acceptable.
- E. Steel Pipe Columns: ASTM A53, Schedule 40.
- F. Bolts and Nuts: Heavy hex head type, ASTM A307, Grade A.
- G. Plain Washers: Round, carbon steel, Federal Specification FF-W-92.
- H. Lock Washers: Helical spring type, carbon steel, Federal Specification FF-W-84.
- I. Sheet Metal Screws: Plated, size 10 minimum, Federal Specification FF-S-111. Provide stainless steel screws where noted or exposed outside the building.
- J. All bolts, washers, nuts, anchor bolts, screws and other hardware shall be galvanized or cadmium plated, unless otherwise specified. No rust shall be visible on metal parts.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Support and seismically restrain piping, ductwork and equipment to resist horizontal, vertical, and overturning forces. Maintain piping, ductwork, and equipment in a captive position without apparent movement or vibration when systems are in operation.
 - 1. Design in accordance with CCR, Title 24.
 - 2. Follow the most stringent requirements of applicable codes, referenced standards and guidelines, and details on the Drawings.
 - 3. Maintain a complete bound copy of the approved seismic restraint system at the jobsite and make it available upon demand to the project inspector and authorities having jurisdiction. Tab and highlight specific details to be used for this project.
 - 4. Support and seismically brace existing piping and ductwork in all project areas where existing supports and restraints do not meet requirements specified herein. Requirement applies only where ceilings are being replaced.
 - 5. Relocate existing supports and bracing wherever necessary to accommodate new work. Relocation of existing supports and bracing is not noted on the Drawings.

- B. Clearances and Attachments:
 - 1. Attach supports and braces directly to building structure. Supports and braces for piping, ductwork, and equipment shall not be in contact with other pipes, ducts, or any other elements except the building structure.
 - 2. Electrical conduits, ceiling support members and suspension wires, lighting fixtures and supports, and other elements of the construction shall not be supported from or in contact with pipes, ducts, or ceiling-mounted mechanical equipment.

- C. Cutting: Do not cut structural steel or concrete sheer walls without University's Representative's specific and written direction.

- D. Field Welding:
 - 1. Where field welding is required, comply with AWS-D1.1 recommended procedures of manual-shielded metal-arc welding for appearance and quality of weld and for methods to be used in correcting welding work.
 - a. Comply with welder qualifications and other requirements in Section 05 50 00 - Metal Fabrications.
 - 2. Grind exposed welds smooth and touch up shop prime coats or hot-dip galvanize where specified.
 - 3. Do not cut, weld, or abrade surfaces which have been hot-dip galvanized after fabrication and which are intended for bolted or screwed field connections.

- E. Vibration and Noise Control:

1. Select and arrange supports and bracing so that objectionable vibration or noise are not transmitted into occupied spaces.
2. Do not make rigid connections to isolated pipes, ducts, or equipment which short circuit vibration isolation devices. Use non-rigid bracing systems for isolated pipes, ducts, and equipment.

3.2 PIPING SUPPORTS

A. Support piping at maximum intervals indicated below:

Maximum Support Spacing ⁽¹⁾⁽²⁾			
Pipe Size	Minimum Rod Size	Copper Tubing	Cast Iron Pipe ⁽³⁾⁽⁴⁾
1 inch & smaller	3/8 inch	6 feet	---
1-1/4 inch	3/8 inch	8 feet	---
1-1/2 & 2 inch	3/8 inch	8 feet	5 feet
2-1/2 & 3 inch	1/2 inch	10 feet	5 feet
4 inch	5/8 inch	10 feet	5 feet

Notes:

- (1) Support pipes within 2 feet of each change of direction. Separately support each branch pipe over 3 feet long unless otherwise noted; first support within 3 feet of main. Support pipes as close as possible to coil and equipment connections; maximum 3 feet away, including the length of each pipe segment. Provide additional supports at concentrated loads such as valves and strainers.
- (2) Requirements shall pertain to all mechanical and plumbing piping systems. See CPC Table 313.1 for additional requirements for plumbing piping.
- (3) Locate supports no more than 18 inches from joints. Brace at no more than 40 feet intervals to prevent horizontal movement
- (4) Support at each horizontal branch connection.

B. Support piping from the building structure so that there is no apparent deflection in pipe runs. Support piping using specified stanchions, pipe hangers, trapezes, and hanger rods. Do not support pipes with wires, rope, or plumber's tape. Do not support piping from ducts, other pipes, conduit, ceiling channels, or any other material except the building structure.

C. Horizontal Pipes: Provide supports as follows:

1. Provide clevis hangers and rods for individual pipe supports.
2. Provide trapeze hangers and rods in accordance with in accordance with the approved seismic restraint system. Maximum trapeze spacing is equal to that of pipe requiring the closest support spacing. Weight carried by hanger rods shall not exceed that carried at individual pipe hangers.

3. Do not support hot and cold piping with 140° F or more temperature difference on the same trapeze hanger.
4. Provide two nuts at each end of hanger rods for positioning and locking.

D. Vertical Piping:

1. Support and/or guide risers at each floor slab penetration.
2. Support all drops to air handling unit coils with base stanchions, unless otherwise noted or approved.
3. Provide base stanchions at all drops greater than eight (8) feet as necessary to maintain required support spacing.
4. Support branch drops to plumbing fixtures at required spacing.
5. Support exposed piping drops on walls on stainless steel channels (Cooper B-Line Fig. B22, B32, B42, or B52) rigidly anchored to backing in wall or as noted on the Drawings. Unless otherwise noted, provide channels at each end of pipe drop and maximum four (4) feet on center.

E. Horizontal Insulated Piping: Provide specified thermal hanger shields at all insulated pipe supports. Provide special insulated supports and anchorage as detailed on the Drawings and specified in Paragraph 2.2 hereinbefore.

F. Vertical Insulated Piping: Support using insulated riser clamps with structural inserts. Provide thermal hanger shields at vertical guides.

G. Provide resilient isolators at all supports of uninsulated copper tubing.

H. Provide all necessary miscellaneous steel members, beams, brackets, fasteners, anchors, etc., required for support of mechanical piping.

3.3 SEISMIC RESTRAINTS FOR PIPING SYSTEMS

A. Seismically brace piping in accordance with CBC 1615A and OSHPD Pre-Approval No. OPM-0043-13, the "Mason Industries Seismic Restraint System."

B. Special Bracing Requirements:

1. Provide additional transverse and longitudinal braces at the following locations:
 - a. As close as practicable to pipe flexible connections, all sizes, except at zone heating coils. At zone heating coils, provide pipe support hangers within two (2) feet of flexible connections.
 - b. As close as practicable to equipment connections.
2. Penetrations through framed wall construction shall not count as a transverse brace.
3. Penetrations through concrete walls or floor slabs may be counted as a transverse brace if movement is limited to 1/4-inch in each direction. For insulated pipes, rigid calcium silicate insulation with a sheet metal shield shall be used at such penetrations.

4. Coordinate seismic bracing on hot pipes so that provisions for thermal expansion are not inhibited. Coordinate location of longitudinal bracing on hot pipes to coincide with required pipe anchors. If longitudinal braces are omitted in certain locations to permit thermal expansion, then increase capacity of remaining longitudinal braces to resist forces due to thermal expansion and seismic action; resultant longitudinal braces shall have capacity equivalent to combined capacity of all omitted braces plus be capable of resisting thermal expansion forces.

- C. Sprinkler Piping: Comply with requirements above and additional requirements of NFPA 13.

3.4 DUCTWORK SUPPORTS AND SEISMIC RESTRAINTS

- A. Support ductwork in accordance with details on the Drawings and requirements in Section 238500 – Ductwork.
- B. There are no ducts of the sizes that require seismic restraints on the project.

3.5 ATTACHMENTS TO STRUCTURE

- A. General:

1. Provide concrete inserts, expansion anchors, bolts, welded beam attachments, beam clamps, brackets, and rods as necessary to support and seismically restrain pipes, ducts, and equipment.
2. Comply with all related installation and testing details and requirements noted on Mechanical, Architectural, and Structural Drawings and Specifications.
3. In occupied buildings, use non-hammer type core drilling tools to set concrete anchors.

- B. Concrete Expansion Anchors:

1. Comply with requirements on Sheet A7.1.
2. Install strictly in accordance with manufacturer's instructions. Unless otherwise noted, provide:
 - a. Minimum twelve (12) diameters edge clearance;
 - b. Minimum twelve (12) diameters spacing between adjacent anchors; and
 - c. Minimum five (5) diameters embedment for wedge anchors, two- (2)-inches minimum.
3. Do not install expansion anchors on sides or bottom of beams, unless otherwise noted or shown. Submit exact locations and details where attachments to concrete beams occur.
4. Minimum anchor size equal to hanger rod diameter.

- C. Steel Beam Attachments: Use approved beam clamps, channel clamps, or welded beam attachments.

3.6 MISCELLANEOUS METAL AND HARDWARE

- A. Provide all necessary steel members, beams, columns, brackets, couplings, and fasteners for support of work in accordance with:
 - 1. Section 05 50 00 - Metal Fabrications.
- B. Support Spreaders: Where hanger load is too great for direct deck or slab attachment, provide spreaders spanning between structural members as detailed on the Drawings.

END OF SECTION 23 02 00

SECTION 23 03 00

INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Includes: All labor, materials, and equipment to furnish and install complete insulation systems for piping, ductwork, and equipment in conformity with applicable codes and authorities having jurisdiction.
- B. Related Work: Coordinate and comply with requirements of the following:
 - 1. Section 22 10 00 - Plumbing Piping Systems.
 - 2. Section 23 85 00 - Ductwork.

1.2 QUALITY ASSURANCE

- A. All insulation materials shall comply with CCR, Title 24, Part 6, Energy Code.

1.3 SUBMITTALS

- A. Submit product data, shop drawings, and samples in accordance with Section 23 00 00 - General Mechanical Requirements, Part 1 and as follows:
 - 1. Submit manufacturer's catalogue data, recommended installation instructions, and proposed application procedures for insulation, jackets, sealants, cements, and finishes.
- B. Product Options and Substitutions: In accordance with Section 01 25 00 – Substitution Procedures.
- C. Submit test reports and certifications in accordance with Section 23 00 00 - General Mechanical Requirements, Part 3.

1.4 DEFINITIONS

- A. "Concealed" areas, where indicated in this Section, shall apply to shafts, furred spaces, space above finished ceilings, inaccessible tunnels and crawl spaces. All other areas, including piping vestibules, mechanical spaces, walk-through tunnels, etc., shall be considered as "exposed."
- B. "Exterior" areas, where indicated in this Section, shall apply to exposed or sheltered areas outside the building, in areaways, and in non-conditioned plenums where insulation is exposed to unfiltered outside air. All other areas shall be considered as "interior."

1.5 DELIVERY, STORAGE AND HANDLING

- A. All insulation material shall be delivered to project site in original, unbroken factory packaging labeled with product designation and thickness. Shipment of materials from manufacturer to installation location shall be in weathertight transportation. Insulation materials delivered to jobsite shall be stored so as to protect materials from moisture and weather during storage and installation. Insulation material shall be protected from long exposure to UV light from sun.
- B. Insulation material exposed to moisture and/or weather during storage and/or installation shall be replaced at no additional cost.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Insulation: Fiberglass.
 - 1. Owens-Corning Fiberglas Corp.
 - 2. Certain-Teed.
 - 3. Johns Manville.
 - 4. Or equal.
- B. Premolded Pipe Fitting Covers:
 - 1. Insul-Coustic/Birma Corp.
 - 2. Speedline.
 - 3. Zeston.
 - 4. Or equal.
- C. Adhesives:
 - 1. Foster Div. Products, Inc.
 - 2. Insul-Coustic.
 - 3. 3M.
 - 4. Or equal.

2.2 MATERIALS

- A. Insulation, jackets, facings, adhesives, coating, and accessories fire hazard shall be rated in accordance with ASTM E84, UL Standard 723, meeting requirements of NFPA 90A, and acceptable to OSHPD.
 - 1. Flame Spread: Maximum 25.
 - 2. Fuel Contributed and Smoke Developed: Maximum 50.
 - 3. Flameproofing treatments subject to deterioration due to moisture or humidity, are not acceptable.
 - 4. Underwriters Laboratories, Inc., listed.

B. Fiberglass Insulation for Domestic Hot and Hot Water Return Piping Systems:

1. Glass fiber insulation, minimum 3.5 lbs. per cubic foot density, with factory-applied all-service jacket and self-sealing longitudinal seam, equal to Owens-Corning ASJ/SSL-II. Submit minimum thicknesses in accordance with Title 24 and ASHRAE 90.1. Increase minimum thicknesses by 0.5 inch for piping on the roof or exposed to untempered outside air conditions. In no case shall pipe insulation be less than 1.0-inch thick.
 - a. Domestic hot water pipe insulation in wall cavities to individual fixture stops can be reduced to 1/2-inch thickness.
 - b. Increase minimum thicknesses by 0.5 inch for piping on the roof or exposed to untempered outside air conditions.
2. Insulation for Valves, Fittings, Flanges and Accessories:
 - a. Radial mitered segments of pipe insulation, continuous and tight fitting, filling all gaps.
 - b. Fiberglass blanket of equivalent density to pipe insulation, continuous and tight fitting, filling all gaps.
 - c. Built-up coat of insulating and finishing cement.
 - d. Pre-molded fitting covers.
3. Pre-Molded PVC Fitting Covers: Johns Manville Zeston 2000 PVC, Owens Corning, or equal, minimum 30 mil thick, molded to the shape of long and short radius elbows, tees, valves, flanges, reducers, end caps, traps, and mechanical grooved-end couplings. 20 mil thick covers can be used for above ceiling insulation fitting covers for piping 2" and smaller.

C. Ductwork, External:

1. Rectangular and Round Supply Air Ductwork: Glass fiber duct wrap insulation, minimum 1.0 pound density, FSK jacket, minimum 1-1/2 inches thick, Owens-Corning Type 100, or equal.
 - a. Insulate flexible connections above occupied areas with two (2) complete wraps of duct wrap insulation, each wrap individually applied and sealed.
2. All longitudinal and transverse insulation joints, penetrations for mechanical pin fasteners, and cut-outs for volume dampers, pitot transverses, access doors, etc., shall be sealed using minimum four- (4)-inch wide FSK tape.
3. Unless otherwise directed, insulate sound traps and other accessories located within duct systems same as for ductwork.

D. Cements and Finishes:

1. Products shall be compatible with surfaces and materials on which they are applied, suitable for use at system operating temperatures, and recommended by insulation manufacturer for each application. Products shall be fire retardant, moisture resistant, mildew resistant, and vermin proof.
2. Insulation Cement: Manville No. 460, Owens-Corning, PK Quick Cote, or equal, mineral-wool-based insulating cement with good adhesion to cold surfaces, and rated to 1,800 degrees Fahrenheit.
3. Lagging Adhesive: Arabol E1658E, Foster 30-36, or equal, thinned per manufacturer's instructions.
4. Vapor Barrier Coating: Foster 30-35, Childers, or equal, non-flammable, fire-resistant, polymeric resin, compatible with insulation.
5. Mastic: Insul-Coustic 551, Foster 35-00, or equal.
6. Glass Cloth: Twinberg-Miller "Glasfab" No. 2020-X, Foster "Mast-A-Fab", or equal.
7. Bonding Adhesive: Foster 85-20, Childers, or equal.

E. Jacketing:

1. Stainless Steel: Factory fabricated minimum 28-gauge Type 304 or 316 stainless steel, with integral bonded polykraft moisture barrier and longitudinal Pittsburgh Z-Lock seam, Childers Lock-On, Zeston, or equal. Secure jacketing with minimum 0.5-inch x 30-gauge stainless steel straps maximum 18" on center. Provide matching jackets for all fittings, flanges and specialties.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General Requirements for Pipe Insulation:

1. Insulate all new piping listed in Articles 2.2B hereinbefore, and where required by Code.
 - a. Insulate all existing piping in the project area which connects to new piping to meet the requirements specified herein. Reinsulate any existing piping of any service whose insulation was removed or damaged as a result of this work.
 - b. Insulate all ancillary connected piping, including drain piping up to and including drain valves, bleed piping with continuous or periodic extended flow, vent piping up to normally closed bleed valves, and piping to expansion tanks, feed tanks, controllers, sensors, gauges, and other devices.
 - c. Remove and re-insulate new or existing equipment, piping, valves, strainers, and other accessories where insulation needs to be removed for system assembly, testing, cleaning, flushing, and chemical treatment.
2. Before applying insulation:
 - a. Test piping for tightness.
 - b. Clean surfaces free of dust, grease, and foreign matter.

3. At Pipe Hangers:

- a. Provide insulation protection saddles and shields specified in Section 23 02 00 - Supports, Anchors and Seismic Restraints.
- b. Embed no hangers or clamps in insulation.

B. Fiberglass Insulation:

1. Butt edges neatly and seal all-service jacket with minimum three-inch-wide self-adhesive strips. Apply in maximum continuous lengths.
2. Fill voids with insulating cement.
3. Longitudinal Overlaps: Minimum four- (4)-inch wide self-sealing adhesive strips, same material as all-service jacket.
4. Provide continuous insulation passing through sleeves or other openings.
5. Valves, Fittings, Flanges, and Accessory Insulation:
 - a. Unless otherwise noted, insulate:
 - 1) Valves, including bonnets.
 - 2) Fittings.
 - 3) Flanges.
 - 4) Strainers.
 - 5) Accessories and Piping Specialties, including thermometer and sensor wells.
 - b. Insulate fittings with tight fitting molded fiberglass with equivalent density and equal thickness to that of adjoining insulation and cover with one-piece fireproof polyvinyl chloride fitting cover. Joints and seams of fitting covers shall be sealed with canvas and vapor-barrier sizing. Fill all gaps so that no voids are present.
 - c. Insulation for Strainer Basket Covers, Circuit Balancing Valves, and Accessories Requiring Service or Inspection: Insulation removable and reusable without damage, with minimum 0.024-inch thick aluminum or 26-gauge galvanized steel covers fastened with cadmium-plated bolts and wing nuts removable without tools. Optionally, provide overlapping PVC jacket with continuous self-adhesive velcro strips to secure removable insulation. Seal all raw fiberglass edges that could be exposed during insulation assembly and disassembly using glass cloth and moistureproof mastic. Maintain required vapor barrier on cold pipes.
 - d. Do not insulate unions, strainer blowdown valves, regulators, steam traps, circuit balancing valves, or control valves in heating water and steam piping. Seal exposed edges of insulation with glass cloth and mastic.
 - e. Insulation of same thickness as that of adjacent piping insulation.

C. Duct Insulation:

1. Insulate all new ductwork listed in Section 2.2C hereinbefore, as noted hereinafter, and where required by Code. Insulate all existing ductwork in the project area that connects to new ductwork to meet requirements specified herein. Reinsulate any existing ductwork whose insulation was removed or damaged as a result of this work. Reinsulate any existing supply ductwork whose insulation was removed in order to seal and/or clean existing ductwork or perform any other work.
2. Adhere duct wrap insulation to rectangular ducts using insulation adhesive conforming to UL Standard 723 and mechanical fasteners such as weld pins or stick clips. Locate fasteners on bottom and sides of ducts 16 inches and larger, within 12 inches of each edge and joint, and maximum 16 inches on center each way. Join seams using clinching staples maximum 8 inches on center, and minimum two per side.
3. Install duct wrap insulation on round ducts with insulation adhesive and sealing tape same as for rectangular ducts. Use 4"-wide sealing tape in addition to 2"-wide self-adhesive strips provided with duct wrap.
4. Seal all insulation joints, seams, and scores with minimum four- (4)-inch foil-reinforced kraft (FSK) backed sealing tape. Rub tape firmly into insulation to obtain a tight vapor-proof seal. Apply tape around transverse seams completely around duct. In addition, provide a complete tape wrap around ducts not more than 24" on center.
5. Neatly trim and seal insulation around access doors, damper operators, pitot traverse locations, test holes, control devices, at support strap or rod penetrations, and around other edge conditions. Use four-(4)-inch wide foil-reinforced kraft (FSK) backed sealing tape to seal insulation edges.
6. Provide sheet metal nosing, overlapping face of insulation by at least one inch, to protect edges of insulation around duct access doors.
7. Where it is not possible to insulate ducts after installation, insulate ducts before final installation. Tightness of work shall not be accepted as a valid reason for omitting any insulation. Where insulation is omitted, ducts shall be removed, insulated, and reinstalled.

END OF SECTION 23 03 00

SECTION 23 85 00

DUCTWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Includes: All labor, materials, and equipment to furnish and install complete working systems in conformity with applicable codes and authorities having jurisdiction for the following:
 - 1. Ductwork, including supports and seismic restraints.
- B. Related Work: Coordinate and comply with requirements of the following:
 - 1. Section 23 02 00 - Supports, Anchors, and Seismic Restraints.
 - 2. Section 23 03 00 - Insulation.
 - 3. Section 23 86 00 - Ductwork Specialties.

1.02 SUBMITTALS

- A. Submit product data, shop drawings, and samples in accordance with Section 23 00 00 - General Mechanical Requirements, Part 1, and as follows:
 - 1. Shop drawings in accordance with Section 23 00 00, Paragraph 1.6J. Show modifications to any existing work necessary to allow this installation.
 - 2. Details showing methods of attachment of duct hangers and seismic braces to building construction.
 - 3. Duct material, gauge, type of seams, joints and duct reinforcing for each size range, including sketches or SMACNA plate number for joints, method of fabrication and reinforcing.
 - 4. Fasteners and sealants.
- B. Product Options and Substitutions: In accordance with Section 01 25 00 – Substitution Procedures.
- C. Submit test reports and certifications in accordance with Section 23 00 00 - General Mechanical Requirements, Part 3.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Comply with the more stringent requirements of SMACNA Duct Cleanliness for New Construction, latest edition, and the following:

- B. Each section of supply and return air ductwork shall be cleaned, dust and oil free, at the shop using a degreasing agent and detergent and sealed airtight at both ends with heavy polyvinyl sheeting (visqueen) and tape. Supply and return ducts shall be additionally disinfected with a 70% solution of isopropyl alcohol. Every section of exhaust ductwork with internal acoustic insulation shall be sealed at the shop with visqueen and tape. Ends of all supply, return, and internally insulated exhaust ducts shall be kept sealed until the time they are joined. When duct sections are joined, wipe down all interior surfaces with a clean white cloth. If cloth shows any dust, then reclean duct as described above. The intent is that no foreign matter be allowed to enter the ductwork at any time after factory cleaning and during construction.
1. Submit detailed shop and field duct handling procedures for review.
 2. Any duct section without open ends covered, or inadequately cleaned in the Owner's Representative's opinion, shall be immediately removed from the job site.
 3. Unlined exhaust ducts shall be vacuum cleaned when installed, but shall otherwise be exempt from shop cleaning and sealing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All products used for duct systems shall conform to NFPA 90A and possess a flame spread rating of not over 25 and smoke developed rating no higher than 50.
- B. Sheet Metal for Ducts:
1. Galvanized Steel Sheet: First quality, lock former quality (LFQ), cold rolled, open hearth soft steel sheet capable of double seaming without fracture, ASTM A924 (formerly ASTM A525) or ASTM A653 (formerly ASTM A527). Galvanized coating shall be G90, 0.90 ounce per square foot. Minimum 24 gauge for rectangular ductwork and minimum 26 gauge for round and flat oval ductwork. Use G90 galvaneal, Zincgrip, or equal, where painting is specified.
- C. Duct Hangers:
1. Band Hangers: Same material as ducts.
- D. Miscellaneous Fasteners:
1. Sheet Metal Screws: Same material as duct, minimum size No. 10, extending not more than 3/4" into duct.
 2. Machine Bolts and Nuts: Galvanized or stainless steel, to match duct construction.
 3. Drilled-in Concrete Expansion Anchors: In accordance with Section 23 02 00 – Supports, Anchors, and Seismic Restraints.
- E. Companion Flanges, Duct Reinforcement, and Miscellaneous Shapes:

1. Same material and finish as ducts.
2. Structural shapes shall meet ASTM A36.

2.02 SEALANTS

- A. Sealing Compound: Ductmate Pro-Seal, United McGill Uni-Grip, 3M No. 900, Hardcast IG-601, or equal, specially formulated for sealing duct joints and seams.
- B. Gaskets for Flanged Joints: 3M Weatherban Tape 1202, Ductmate 440, or equal, butyl or polymer based tape, FDA or USDA approved.
- C. Hard-setting Joint Tape: Hardcast RTA-50 and DT tape, United McGill Uni-Cast MTA-20 and MDT Tape, or equal.
- D. All sealants shall be UL listed.
- E. Duct tapes are not allowed.

2.03 FACTORY FABRICATED DUCT JOINT SYSTEMS

- A. Joint stiffness ratings tested and certified in accordance with SMACNA test procedures by an independent testing laboratory.
- B. Same material as duct.
- C. Metal corner pieces with bolted connection.
- D. Minimum six- (6)-inch-long 20-gauge metal clips within six (6) inches of ends and not more than 12 inches on center. Use plastic clips at connections to fire dampers and combination fire/smoke dampers.
- E. Assemble strictly in accordance with latest printed edition of manufacturer's installation instructions using specified gasket tape, triple lapped at corners.
- F. Screw or spot weld push-on flanges to sheet metal duct at each corner and maximum 8 inches on center across flange.
- G. Ductmate 25/35, Ward Flange Model H/J, Lockformer TDC, Engles TDF, or equal.

PART 3 - EXECUTION

3.01 DUCTWORK FABRICATION AND INSTALLATION

- A. General:
 1. Where not otherwise shown or noted on the Drawings, or required by codes, work shall conform to "HVAC Duct Construction Standards, Metal and Flexible," Third Edition, 2005, as published by the Sheet Metal and Air Conditioning Contractors National Association, Inc., hereinafter referred to as the "SMACNA Standards." Comply with the most stringent requirements of the SMACNA Standards, CMC, NFPA, and these Specifications.

B. Installation:

1. Install ducts true to line and grade.
2. Accurately place ducts and coordinate with other work. Place ducts so that piping, ceiling support grid, conduits, lighting fixtures, and supports may be installed without warping, springing, or deforming ducts or other work.
3. Ductwork shall not be in contact with ceiling and light supports, wall framing, and other items which might transmit noise into occupied areas. Installed ductwork shall be free of objectionable vibration, chatter, and pulsations.
4. Duct sizes indicated on the Drawings are net inside dimensions. Where size for a duct segment is not indicated, the duct segment size shall be equal to the largest duct segment to which it is connected. Transition to smaller size shall occur on side of fitting where smaller size is indicated.
5. Alter duct shapes on the basis of equal friction where required to facilitate the installation. Make other necessary adjustments in accordance with Section 230000 - 1.8.
6. Where it is not possible to insulate ducts after installation, insulate before final installation. Tightness of work shall not be an acceptable reason for omitting insulation. Where insulation is omitted, remove ducts as required and add insulation.
7. Ductwork shall not be in direct contact with ceilings, wall construction, ceiling support wires, or the work of other trades, unless specifically shown otherwise on the Drawings. Where uninsulated ducts must be installed tight to the construction, provide minimum 1/2-inch-thick felt padding between sheet metal and construction.
8. Review heights of all lighting fixtures. Install ductwork so that sheet metal is not less than 3-inches above top of light fixtures. If this clearance is not available, then carefully coordinate the installation, modify duct shapes in accordance with Paragraph 5 above, and/or install ductwork with reduced clearance.
9. Do not install ductwork over electrical panelboards, switchgear, switchboards or motor control centers.
10. When original galvanized finish is altered or damaged, prepare surface using power sanders or wire brushes to remove rust, paint, etc., and apply ZRC Products Zinc Rick Coating, Crown Cold Galvanizing Compound, or equal, cold galvanizing coating.
11. Provide airtight connections to coils, automatic dampers, sound attenuators, and other devices installed in duct systems.

12. Firestopping: Wherever ducts penetrate fire-rated vertical and horizontal barriers, such as corridor crossings without fire dampers or floor slab penetrations outside of riser shafts, properly firestop around the perimeter of ducts in accordance with Section 078413 - Penetration Fireproofing, and details of UL Through Penetration Firestop System WL-7008, WL-7013, or other applicable UL system. Coordinate cutting and framing of wall and floor openings to have clearances and details same as that required for fire dampers through the same openings.

C. Fittings:

1. Provide duct fittings as specified below, as noted and detailed on the Drawings.
2. Transitions: Unless otherwise noted on the Drawings, uniformly taper with a maximum included angle of 15 degrees for diverging flow and 60 degrees for converging flow. At fan discharges, limit transitions to 10 degrees included angle unless a steeper transition is specifically called for; do not scale Drawings for fan discharge fittings.
3. Rectangular-to-Round Transformations: Unless otherwise noted on the Drawings, uniformly taper with minimum length equal to round duct diameter.

D. Rectangular Duct Pressure Classifications:

1. Unless otherwise noted or required by Code (see CMC Chapter 6 and NFPA), construct rectangular supply, return, and exhaust duct systems to a SMACNA Pressure Class of Two (2) inches W.G., as summarized on Table 2-3 of the SMACNA Standards.
2. Construct rectangular ducts within five (5) duct widths of fans and air handling unit inlet and discharge connections to a SMACNA Pressure Class of Six (6) inches W.G., as summarized on Table 2-6 of the SMACNA Standards. "Duct width" shall be the longest dimension of the air handling unit inlet and discharge opening.
3. Cross break or bead all sides of rectangular ducts.
4. Provide heavier gauges where noted on the Drawings.
5. See Paragraph H below for round duct construction requirements.

E. Rectangular Duct Joints and Reinforcement:

1. Low Pressure Ducts (SMACNA Pressure Classes Two (2) Inches W.G. and below), choice of:
 - a. Ducts Up to 60 Inches: Standing seam or pocket lock, SMACNA Types T-15, T-16, T-17, T-18, T-19.
 - b. All Sizes: Flanged, SMACNA Type T-22, using angles of sufficient rigidity and sheet metal of sufficient thickness to avoid the use of tie rods, up to 2 x 2 x 1/4 companion angles.

- c. Duct connection systems, including Ductmate, TDC (SMACNA Type T-25a), or equal, may be used as an alternate for ducts up to 72 inches, or to the maximum duct width where the alternate joint meets specified stiffness requirements without tie rods, whichever is less. Submit certified joint stiffness ratings.
2. Furnish same joint type on all four sides.
 3. Connections to existing ductwork shall be equivalent to the specified pressure classification for new ductwork. Existing duct joints, if undamaged, may be reused if they meet specified stiffness requirements and can be made airtight. If new joints are required, provide Ductmate 35, Ward, or equal, flange on each side.
 4. Furnish specified gasket at flanged joints. Join flanges using minimum 5/16-inch diameter bolts.
 - a. For Low Pressure Ducts: Maximum 6 inch spacing.
 5. Longitudinal joints shall be flat crimped Pittsburgh Lock, continuously sealed.
 6. Flat "S" slip and drive slip transverse joints shall be used only at fire dampers, tight fitting shear wall and slab penetrations, air terminal unit connections, and only if necessary.
- F. Joint Sealing:
1. Seal all ducts in accordance with SMACNA Seal Class "A".
 - a. Seal flanged joints, companion angle joints, or proprietary flange systems with specified gasket, minimum triple lapped at all four corners. Torque bolts evenly to 1/16-inch compression of tape. Additionally, seal all flanged joints on the outside at each corner using specified sealing compound. Additionally, seal all slip-on flanges, such as Ductmate, on the outside along the entire length of the flange using specified sealing compound.
 - b. Seal pocket lock and other slip joint fittings with specified sealant. Alternately, apply hard-setting joint tape neatly over cleaned joints, trimming and double lapping all corners. Use a single four- (4)-inch wide strip for joints up to one- (1)-inch high, and two four- (4)-inch wide strips overlapped minimum one (1) inch for taller joints. Self-adhesive duct tape shall not be permitted.
 - c. Seal longitudinal seams, branch duct intersections, collar tap-ins, fitting subsections, connections to diffusers, plenums and louvers, access panel frames, all other joints and seams, and all screw heads, rivets, and other duct penetrations with specified sealant, Hardcast RTA-50 and DT tape, United Uni-Cast MTC-50 and MDT tape, or equal, as necessary for a permanent, airtight seal.
- G. Round Ductwork:

1. All round ductwork (positive and negative pressure) shall be constructed to a Pressure Class of Negative Four (-4) Inches W.G., as summarized on Table 3-11 of the SMACNA Standards, regardless of rectangular duct pressure classification, unless heavier gauges are specified or noted on the Drawings. Ductwork shall be United McGill, SEMCO, or equal, prefabricated, machine wrapped, round duct with a tightly sealed spiral locked seam.
2. Fittings shall be McGill "Uni-Seal", or equal contractor fabricated fittings, minimum two gauges heavier than equivalent straight duct, with continuously welded seams or spot-welded and continuously sealed seams.
3. Joints: Prefabricated round ducts shall be jointed by means of couplings with swaged bead in center, SMACNA Type RT-1, and secured with sheet metal screws at end of coupling. Duct-to-fitting joints shall be made by either a tight slip fit of the fitting lapped inside the duct or by means of couplings with swaged bead in center, all secured with sheet metal screws, not more than six (6) inches on center, minimum three (3) places on each side of sleeve.

H. Duct Connections at Diffusers and Registers:

1. Branch ducts that connect to diffusers and registers shall match the diffuser or register neck size. If duct size indicated on the Drawings does not match the neck size, then furnish a concentric transformation fitting at the diffuser connection.
2. Where box connections are shown or required due to tight conditions, provide at least one duct width cushion head (minimum 12 inches) for supply ducts. Drop to diffuser neck shall be vertical without offsets. Length of drop shall be not less than one duct width, except where space is very limited. See other details on the Drawings.
3. Where round flexible ducts are shown connecting to diffusers or grilles with square (or rectangular) necks, provide concentric square-to-round (or rectangular-to-round) adapters by diffuser manufacturer at the diffuser neck, unless noted otherwise on the Drawings. Flexible duct elbows shall be long radius without crimps at connections. All flexible duct connections shall be straight-in; offsets at duct or diffuser connections shall not be acceptable. See additional details on the Drawings.
4. Attach sheet metal ducts to diffusers and registers with sheet metal screws maximum eight (8) inches on center, and seal as required for transverse duct joints.
5. Angular offsets and other irregular connections at diffusers and registers are prohibited.
6. Where location of diffusers and registers is governed by work in other Sections, such as integrated ceilings, set diffusers and registers in locations shown on Architectural Reflected Ceiling Plans and coordinate exact dimensions with trade performing this work.
7. Return and Exhaust Grilles: Install in ceilings with louvers pointing toward closest wall. Install high sidewall grilles with louvers pointing toward ceiling. Install low wall grilles with louvers pointing toward floor.

I. Duct Support: As noted or detailed on the Drawings, and as follows:

1. Support horizontal rectangular ductwork from construction by 1-1/4-inch wide x 18 gauge galvanized strap hangers screwed eight (8) inches on center to ducts and suspended from construction. Attach straps to duct using a minimum of three No. 10 sheet metal screws per strap. Bend strap under duct and screw into bottom of duct. Double fold strap at attachment to structure. Hangers for ducts shall be spaced not over 8 feet on center for ducts smaller than 18 inches in largest dimension, and not over 6 feet on center for ducts 18 inches and larger. Ducts over 48 inches in largest dimension, support from minimum B-Line B22, Unistrut P-1000, or equal, trapeze hangers sized for the load per SMACNA Standards. Suspend trapeze hangers on minimum 3/8-inch-diameter hanger rods as close as possible to duct wall.
2. Support round steel ductwork up to 24" diameter from construction by means of 1-1/4-inch wide x 18 gauge galvanized steel straps with inside radius of hanger equal to outside radius of duct. Straps shall extend around the entire perimeter of the duct and be secured at the top with a 1/4-inch diameter bolt. Double fold strap at attachment to structure. Ducts 18-inch diameter and larger, support not more than 6 feet on center. Ducts under 18-inch diameter, support not more than 8 feet on center. Provide not less than one hanger per branch.
3. Provide supports within 3 feet of any change in direction, on both sides of elbows, and within 3 feet for branch connections.
4. Attach duct hangers to existing concrete using expansion anchors in accordance with Section 230200 - Supports, Anchors, and Seismic Restraints.
5. At connections to flexible ducts, support rigid branch ducts within 24 inches of the flexible duct connection. Support flexible ducts to maintain long radius bends in accordance with requirements in Section 238600 - Ductwork Specialties.
6. The following upper and lower attachments are prohibited, except where specifically noted or detailed on the Drawings.
 - a. Nailed pin fasteners.
 - b. Expansion nails without washers.
 - c. Powder charged or mechanically driven fasteners (forced entry anchors).
 - d. Beam or "C" clamps without retaining clips (provide retaining clips for "C" clamps).
 - e. Friction clamps.
 - f. Loop bent onto end of strap or rod.
 - g. Wire hangers.
 - h. Trapeze hangers supported by wires or straps.
 - i. Rods, straps or welded studs directly attached to metal deck.

j. Lag screw expansion anchor.

k. Rivets.

3.02 DUCT CLEANING

- A. Clean all diffusers, and air ducts so that no dirt or dust is present in any system. Clean using industrial vacuum cleaner at time of installation. Do not install duct sections without cleaning. Keep all openings in air systems completely sealed at all times during construction. See also Paragraph 1.05, hereinbefore.
- B. Wherever new exhaust ductwork is connected to existing, thoroughly clean existing ductwork downstream of connection. Unless otherwise noted or directed, clean existing ductwork back to riser or fan, or to phase boundary, whichever occurs first. Cleaning shall conform to the NACCA Standard for Assessment, Cleaning, and Restoration of HVAC Systems - 2013, and shall include the removal and disposal of visible dirt, debris, and other contaminants. Use an industrial HEPA- filtered vacuum and rotary brush system appropriate for each surface.
- C. Do not connect to existing air systems prior to cleaning.

3.03 CHECKING

- A. Examine and clear any obstructions and debris. Check all volume dampers, and diffusers.
- B. Check for air leaks. Patch, repair, or replace ductwork as required. All ductwork shall be made essentially airtight. Repair or replace damaged or leaking ducts and joints as required to the satisfaction of the Owner.

END OF SECTION 23 85 00

SECTION 23 86 00

DUCTWORK SPECIALTIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Includes: All labor, materials, and equipment to furnish and install complete working systems in conformity with applicable codes and authorities having jurisdiction for the following:
 - 1. Flexible Ductwork.
 - 2. Diffusers, Registers, and Grilles.
- B. Related Work: Coordinate and comply with requirements of the following:
 - 1. Section 23 85 00 - Ductwork.

1.2 QUALITY ASSURANCE

- A. Noise Criteria: Contribution to room noise levels shall not exceed NC 30.

1.3 SUBMITTALS

- A. Submit product data, shop drawings, and samples in accordance with Section 23 00 00 - General Mechanical Requirements, Part 1, and as follows:
 - 1. Product Data: Manufacturers' catalog sheets, diagrams, standard schematic drawings, SMACNA plate numbers, and installation instructions for all manufactured or shop-fabricated items including:
 - a. Flexible Ductwork.
 - b. Diffusers, Registers, and Grilles.
- B. Product Options and Substitutions: In accordance with Section 01 25 00 – Substitution Procedures.
- C. Submit test reports and certifications in accordance with Section 23 00 00 - General Mechanical Requirements, Part 3.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Flexible Ductwork:
 - 1. Flexmaster.

2. Cody West.
3. Thermaflex.
4. Or equal.

B. Diffusers, Registers, and Grilles:

1. Anemostat.

C. Flexible Ductwork: Flexible ducts shall consist of an exterior fiberglass reinforced metalized vapor barrier jacket with a maximum permeance of 0.05 perms per ASTM E96 Procedure A, 1-1/2"-thick fiberglass insulation (K=.25 @ 75 degrees Fahrenheit), acoustically permeable polyethylene inner fabric liner, overlapped and mechanically locked with a formed galvanized steel helix without the use of chemicals or adhesives. Minimum acoustical properties as scheduled below. UL 181 labeled as a Class I air duct rated for a minimum positive working pressure of ten (10) inches W.G., a minimum negative working pressure of five (5) inches W.G. (through 16 inches diameter), and a velocity of 5,500 FPM. Cut to exact lengths required, maximum six (6) feet. Flexmaster Type 1M, Cody West, Thermaflex, or equal.

1. Acoustical performance shall be tested by an independent ETL-certified laboratory in accordance with the Air Diffusion Council's "Flexible Air Duct Test Code" FD 72-R1, Section 3.0, Sound Properties:

- a. Minimum insertion loss (dB) of a 6-foot length of straight duct tested at a velocity of 2,500 feet per minute:

Octave Band, Hz	125	250	500	1000	2000	4000
6" diameter	5	16	18	17	16	13
8" diameter	5	16	17	18	16	11
12" diameter	8	17	14	18	14	11

D. Diffusers and Registers: Anemostat. Product numbers following are Anemostat.

1. Finish for Non-Stainless Steel Diffusers and Registers:
 - a. Color: Same color as ceiling or wall in which installed, unless otherwise directed. Where the Owner's Representative directs that specific colors are not required, provide standard white. Submit color samples for all applications.
2. Finish for Stainless Steel Diffusers and Registers: No. 4 polish or better in accordance with ASTM A480.
3. Border Types: As required for compatibility with ceiling type. Provide neoprene gaskets on all diffusers, grilles, and registers to effect an airtight seal.

4. Performance and Acoustic Data: ADC Certified. Submit for approval.
5. Dampers: Do not provide opposed blade dampers at diffuser necks unless specifically noted otherwise.
6. Supply Diffusers:
 - a. Ceiling Diffusers in Hard Lid Ceilings: Anemostat “S-Vent” ligature resistant Model SSV432-FM without faceplate deflection, face mounted with rear installation plate.
7. Return and Exhaust Grilles and Registers:
 - a. Ceiling Grilles in Rooms with Hard Ceilings: Anemostat “S-Vent” ligature resistant Model SV6-RM, 2 inches by 3/16 inches openings, rear mounted.
 - b. Clean, prime and finish paint any exposed sheet metal behind return grilles flat black in accordance with Section 09 91 23 – Interior Painting.
8. Sizes: Neck sizes, airflows, and throw directions as indicated on the Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. All devices installed in supply ducts shall be cleaned and disinfected at the time of installation.
- B. Flexible Ductwork: Flexible ducts shall be supported at or near mid-length with 2-1/2"-wide minimum 20-gauge steel hanger collar bent to one-inch larger diameter than duct size, and attached to structure with a specified strap hanger. Installation shall minimize sharp radius turns or offsets. Maximum length shall be six (6) feet, with a maximum of one long radius 90 degree bend. Flexible ducts can be used only at connections to air inlets and outlets where specifically shown on the Drawings. Cut to exact lengths required and secure inner fabric liner to duct with cadmium or chromium plated steel compression clamps; provide minimum two-inch overlap over rigid duct sleeve. After clamping inner liner, pull insulation and outer jacket back into position and seal with two (2) complete wraps of four- (4)-inch wide FRK insulation tape.
- C. Air Outlets and Inlets:
 1. Diffusers, Grilles, and Registers: Angular offsets and other irregular connections at diffusers and registers are prohibited. Set diffusers and registers in locations shown on Architectural Reflected Ceiling Plans and coordinate exact dimensions.
 - a. Wherever directed by the Owner’s Representative, provide black painted blank-off plates over portions of supply diffusers that blow supply air over thermostats, temperature sensors, patient beds, or other undesirable locations. Secure blank-off plates in diffuser necks so that they are invisible to anyone standing on the floor.

- b. Protect interior surfaces of diffusers, grilles, and registers from dust and paint spray. Clean any dust that accumulates inside air outlets and inlets. Repaint any diffuser, grille, and register surfaces that have been marred by ceiling and wall painting to exactly match factory finish.
2. Support diffusers, grilles, and registers from the structure in accordance with governing codes and regulations.
3. Keep supply air diffusers absolutely clean during construction and after installation. At end of project and before occupancy, remove and thoroughly clean supply diffusers, plenums, and exhaust grilles.
4. Paint any sheet metal surface or other building material surface visible through air outlets and inlets flat black in accordance with Section 09 91 23 – Interior Painting.

END OF SECTION 23 86 00

SECTION 23 99 00

TESTING AND BALANCING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Includes: All labor, materials, instrumentation, and equipment to check, adjust, test, and balance HVAC systems in conformity with applicable codes and authorities having jurisdiction.
- B. Air and water balancing shall be performed by an independent Test and Balance Agency retained as a first-tier subcontractor under the general contractor. Contractor shall provide all tests, inspections, and preparations specified herein to facilitate balancing activities of the Test and Balance Agency. Final test and balance report shall be submitted and approved prior to project substantial completion.
- C. Related Work: Coordinate and comply with requirements of the following:
 - 1. Section 238600 - Ductwork Specialties.

1.2 REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

- A. Requirements of Regulatory Agencies: Minimum air change rates and air balance between and within rooms shall be in compliance with California Mechanical Code Table 4-A.
- B. Referenced Standards:
 - 1. AABC - Associated Air Balance Council.
 - 2. ASHRAE - 2015 HVAC Applications Chapter 38.

1.3 QUALITY ASSURANCE

- A. Prior to balancing, Contractor shall perform complete testing, checking, and adjusting of all systems and equipment installed or modified.

1.4 SUBMITTALS

- A. Submit not more than fifteen (15) days after award of Contract:
 - 1. If pre-demolition airflow measurements are required prior to the follow-up submittal described below, then submit detailed procedures and instrumentation, identifying all locations and types of measurements to be taken.
- B. Submit not more than sixty (60) days after award of Contract:

1. Detailed Agenda of Test and Balance Work, including:
 - a. Detailed procedures, specific to this project, for pre-demolition, post-demolition, intermediate, and final air balancing.
 - b. Schedule for each aspect of work.
 - c. Report forms in accordance with AABC National Standards, with complete design data for all inlets, outlets, and other devices to be balanced, less field test data.
 - d. Single line drawings of HVAC systems to be balanced, indicating all inlets, outlets, pitot traverses, and other devices to be balanced.
2. Descriptive Data, including:
 - a. Air flow measuring equipment.
 - b. Pressure gauges.
 - c. Thermometers.
 - d. Other testing instruments.
- C. Submit one (1) electronic and two (2) hard copies of pre-demolition reports as specified herein prior to any work that will modify existing airflows.
- D. Submit one (1) electronic and two (2) hard copies of intermediate balance reports as specified herein within 24 hours after any work that modifies existing airflows in occupied areas of the Hospital.
- E. Submit upon completion:
 1. One (1) electronic and two (2) bound copies of inspection, preparation, and test reports as specified hereinafter, in typewritten form.
 2. One (1) electronic and two (2) bound copies of the final test and balance report typed in final form, including drawings identifying locations of every air outlet and inlet and pitot traverse.
 - a. Include fan curves with design and actual operation points plotted.
 - b. Include certificates of calibration for all test instruments dated within six (6) months prior to work being performed.
 - c. Include copy of performance guarantee.
 - d. Report shall be organized with a table of contents, general information, calibration certificates, brief description of tests and procedures, dated test data and report forms, reference drawings, and actions taken to correct deficiencies. Design and test data shall be presented on standard forms included in the AABC National Standards Appendix.
 3. Written reports, as necessary, describing any components which do not function properly.
 4. HVAC controls checking spreadsheets.

PART 2 - PRODUCTS

2.1 INSTRUMENTS

- A. Use only instruments which have the maximum field measuring accuracy and are best suited to the function being measured.
- B. Scale ranges shall be appropriate for the value being measured. Utilize instruments with minimum scale and maximum subdivisions available for each measurement. Utilize instruments which will permit balancing within tolerances listed in Paragraph 3.03.C.1 hereinafter. Submit calibration certification of all instruments used on this project.
- C. Should field conditions dictate the use of other than submitted and approved procedures and instrumentation, then submit appropriate alternative methods and instrumentation for approval.

PART 3 - EXECUTION

3.1 PREBALANCE PREPARATION BY TEST AND BALANCE AGENCY

- A. Review Drawings and Specifications, and verify the adequacy of all balancing devices. Recommend locations for additional balancing devices and other enhancements that will ensure a total system balance. Notify the Owner's Representative in writing if the design poses any potential balancing problems or if any additional balancing devices which are not shown or specified are necessary for a total system balance.
- B. Coordinate schedule so that system testing and balancing is complete final acceptance of each phase of the work.
- C. Preliminary Investigations: Wherever noted on the Drawings, perform measurements before work begins and as soon as ceiling access is made available. Submit one (1) electronic and four (4) bound copies of report summarizing the above measurements before construction begins.
- D. Project Meetings and Preliminary Observations: Attend regular project meetings during all periods when prebalance preparation and active testing and balancing occur. Provide construction observations when ductwork and piping are approximately 60% and 90% complete. The following activities, as a minimum, shall occur.
 - 1. Review shop drawings to verify that all necessary balancing devices will be provided. Confirm final schedule and coordination issues at this time.
 - 2. Identify the times and scope of any intermediate air balancing devices will be provided. Confirm final schedule and coordination issues at the time.
 - 3. After rough-in of ducts, piping, and equipment is complete, identify traverse locations, access requirements, and final placement of all balancing devices. Identify the times and scope of any interim air balancing required during the construction.

4. Review the location and type of volume dampers and automatic volume control devices. Notify the Owner's Representative of any inaccessible or improperly installed conditions.
 5. Review operating status of automatic temperature controls.
 6. Contractor shall demonstrate to the Project Inspector and Test and Balance Agency that all prebalance preparation activities specified hereinafter have been or will be complete prior to system balancing for each phase.
 7. Contractor shall provide sufficient notice when any connection or disconnection of existing piping or ductwork occurs, which will require intermediate hydronic or air balancing.
- E. Identify Testing Locations: Drill minimum 3/8-inch diameter holes in ductwork with burrs removed for temperature, pressure, and velocity readings. Drill test holes in the following locations: Each side of each filter, fan, coil, and multi-blade damper; 6-inches on center for traverse readings in all main ducts; in each new branch duct connecting to an existing duct; and as directed in the field. Install a Ventlok 699 Instrument Test Hole, or equal, with red painted cap in each hole. Omit additional holes where air pressure gauges are installed across filters. Trim and vapor seal duct insulation around all test holes. Test holes shall be fully visible and accessible from ceiling access openings. Mark above ceiling instrument holes on test and balance floor plan drawings.
- F. Pre-Demolition Airflow Surveys:
1. Wherever pre-demolition airflow measurements are noted on the Drawings or required herein, measure all air inlets and outlets and branch ducts that will be affected by the subsequent demolition. Report the position of branch volume dampers and static pressure on the main duct side of volume dampers. Report airflow and static pressure in all ducts that cross the project boundaries.
 2. Submit pre-demolition airflow surveys at least seven (7) days prior to the commencement of demolition. Include sketches that clearly identify the location of each airflow and static pressure reading.

3.2 PREBALANCE PREPARATION BY CONTRACTOR

- A. At the beginning of the project, provide the Test and Balance Agency with a complete set of construction documents and project schedule. Include all testing and balancing activities on the project schedule. As work progresses, provide copies of change orders, schedule updates, and shop drawings.
- B. Provide access for pre-demolition airflow measurements specified above.
- C. Participate in project meetings with Test and Balance Agency specified above.
- D. Schedule all work to eliminate system shutdowns once balancing is started.
- E. Schedule all work to assure uninterrupted access to mechanical equipment and conditioned spaces. Provide safe access to all components requiring testing, balancing, and servicing.

- F. Complete all interior and exterior walls, ceilings, and doors prior to system balancing.
- G. Provide Test and Balance Agency with a complete set of project specifications and shop drawings showing exact locations of all circuit balancing valves and duct volume dampers.
- H. Provide Test and Balance Agency with a complete set of approved submittal data and operating and maintenance manuals for all equipment that requires testing and balancing.
- I. Fully coordinate the readiness, correctness, and the safety of the electrical power and control systems before making any connection or starting any equipment.
- J. During each phase of work in which balancing will occur, Complete the following work prior to commencement of balancing activities:
 - 1. Complete all punch list items, including correction of abnormal duct fittings identified by the air balancer that will affect balancing of the system. Install additional balancing devices as recommended by the Test and Balance Agency.
 - 2. Air Systems:
 - a. Air Diffusers and Registers: Check that all diffusers, registers, and grilles are installed and of the correct size and type. Adjust for proper air throw pattern as shown on the Drawings or as directed.
 - 3. Controls:
 - a. Check that all system controls are installed and functioning.
 - b. Check that all maximum and minimum setpoints have been entered and are active.
 - c. Check that all thermostats are installed, calibrated, and communicating.
 - 4. Place all systems in automatic operation. Operate the systems for at least 72 consecutive hours without shutdown with all equipment in good working order prior system balancing.
- K. Submit an itemized report that each prebalance activity described above has been successfully accomplished. Testing and balancing work shall not begin until this report is submitted and approved.
- L. Make any corrections recommended by the Test and Balance Agency necessary to balance air and hydronic systems.
- M. During System Balancing:
 - 1. Wherever the Test and Balance Agency reports that improper connections to diffusers or registers result in deficient airflow or improper air distribution, then

- make all necessary corrections to ductwork so that adequate and evenly distributed airflows emanate from every diffuser and register.
2. Wherever the Test and Balance Agency reports that a proper air balance requires additional main duct volume dampers, then provide dampers at recommended locations. Provide volume dampers at locations not shown on the Drawings at locations recommended by the Test and Balance Agency. All branch ducts require volume dampers whether shown on the Drawings or not.
- N. If Contractor fails to complete prebalance activities specified above, and these activities are performed by the Test and Balance Agency during system balancing, then the cost of such work shall be documented by the Test and Balance Agency, and this cost plus related expenses shall be deducted from the Contract Amount.
1. Acceptance of conditions demonstrated during project meetings specified under Paragraph 3.01D shall not relieve the Contractor of responsibility for providing conditions necessary for a total system balance, or for the cost of specified Contractor prebalance activities performed by the Test and Balance Agency.

3.3 TEST AND BALANCE ACTIVITIES

A. General:

1. All work shall conform to standard requirements and procedures contained in the AABC "National Standards for Total System Balance" and "Test and Balance Procedures" and recommended procedures contained in ASHRAE Standard 111 "Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems". Perform all necessary procedures, tests, measurements, and adjustments specified herein and as indicated in these standards, whether specified or not, as required for a total system balance.
2. The project shall be completed in phases so that the Owner can make use of certain spaces before other work is complete. Provide complete testing and balancing services for each phase of the work, including final test and balance reports, so that the spaces may be occupied according to the project schedule. Provide immediate temporary rebalancing of supply and exhaust systems whenever existing branch ducts are capped. Submit interim balance reports within 24 hours of cutting and capping any existing ducts.
 - a. Work includes complete balancing of new and existing air handling systems that are affected by the work during each phase of construction. Make pre-demolition measurements and adjust total airflow at main existing exhaust and supply fans as described on the Drawings and specified herein. Maintain existing airflows to occupied areas of the Hospital, unless different airflow setpoints to occupied areas are directed by the Owner's Representative.
 - b. Work includes complete balancing of all inlets and outlets in all areas under scope of this project as shown on the Drawings.
 - c. Work includes pre-demolition and/or preliminary testing as noted on the Drawings.
 - d. Work includes other phased tasks as shown on the Drawings and specified herein.

3. The Test and Balance Agency is advised that deficiencies in HVAC construction will likely be encountered during balancing activities. Include time to investigate, identify, and recommend corrective actions related to conditions that inhibit a total system balance to optimum performance.

B. Conditions for Test and Balance Service:

1. Test and balance services shall be performed upon completion of air handling and water system installation and after completion of work specified in Paragraph 3.02 above.
 - a. Verify that all preparatory activities have indeed been satisfactorily accomplished and that systems are ready for balancing.
 - b. Verify proper operation of all equipment and safety devices.
2. Immediately recommend adjustments and/or corrections to equipment and air and water systems necessary for proper balancing and submit to the Owner's Representative. Proceed only after necessary adjustments and corrections are made.

C. Balancing Criteria and Requirements:

1. Air inlets and outlets of 200 CFM or less shall be balanced to within plus 10 percent to minus 0 percent of design; all other air system readings within plus 5 percent to minus 0 percent of design. Temperature readings shall be accurate to within 1/2 degree F.
2. Instruments shall have been calibrated within the last six (6) months and checked for accuracy prior to starting the balancing procedure. Make velocity readings with an instrument that does not require a separate timer.
3. All readings, measurements, and observations shall be recorded on printed AABC data sheets and tabulated with appropriate calculations. Recorded data shall include, but is not limited to, the following:
 - a. Air velocities, entering and leaving air temperatures, and entering and leaving water temperatures and air and water pressure drops at new heating and cooling coils.
 - b. Main and branch duct air volumes and static pressures for new ductwork and existing exhaust ductwork in the project area.
 - c. Velocities, air volume factors, and air volumes of new air outlets and inlets, plus same data for existing air inlets and outlets in and near the project area.

D. Air Balancing:

1. The intent of this air balance is to obtain design CFM at all outlets and inlets with minimum possible fan speed and system static pressure, and with acceptable noise levels in occupied areas.
 - a. At least one (1) main zone volume damper and one (1) branch volume damper in each zone shall be fully open at the end of balancing.

- b. Make special note wherever abnormal installed conditions (such as crimped flexible ducts, tight offsets, improperly placed or unusual tap-ins or fittings, etc.) do not permit a proper air balance without increasing main duct static pressure or fan speed. Report such conditions as early as possible, preferably during preliminary observations, and submit airflow measurements, static pressure profiles in connecting ductwork, damper positions, and other information and observations that will permit analysis and identification of necessary corrective actions. Wherever corrections are made to abnormal installed conditions, rebalance affected inlets and outlets.
 - 1) Investigate as described above all conditions where excessive noise is generated at air inlets and outlets.
2. Final position of manual dampers shall be plainly marked after balancing is complete.
3. Take measurements at registers and diffusers with approved instrumentation in accordance with manufacturer's instructions.
4. Record results of the air balancing on AABC forms, including positive identification of points of measurements taken, shown on a plan such as a marked print, and include the following data:
 - a. Size, model number, and Ak factor of each inlet and outlet.
 - b. Design CFM.
 - c. Design velocities.
 - d. Actual CFM.
 - e. Actual velocities.
 - 1) Note: Design airflows shall be computed based on the sum of air outlets and inlets, which generally differ from scheduled fan airflows.
5. Adjust main dampers and splitter dampers before adjusting individual branch dampers. In general, adjust splitter dampers first to obtain the proper proportion of airflow in each branch. Adjust main duct dampers second to obtain design airflows in each main duct. Adjust branch volume dampers last to obtain design airflows in each branch duct. Dampers behind diffusers or registers shall be utilized only as a final adjustment and only when directed by the Owner's Representative.
6. Make adjustments at all diffusers and registers to prevent drafts at the occupant level in the space. Recommend blank-off plates behind outlets, throw reducing vanes, or vane adjustment as required or directed.
7. Positive or negative pressure relationships between supply and exhaust CFM shall be achieved in spaces wherever specifically shown or required by Code. Required air pressure relationships are absolute and shall be met regardless of allowed tolerances for air flow adjustments. All other rooms which are both supplied and exhausted shall be in balance (no difference between supply and exhaust), unless otherwise shown or specified.
8. The balancing report shall include a separate tabulation for each room CFM as follows:

1	2	3	4
Rm. No.	Supply	Exhaust	Difference: Col. 2 - Col. 3

- a. Report shall include both design and measured values for Col. 2 and 3. Report shall also indicate tabulations of total air flows for each fan system.
 - b. Report shall include differential pressures measured across (closed) doors into sensitive areas, including isolation rooms and vestibules.
9. Wherever flexible duct connections at supply diffusers are crimped or do not have a long radius elbows with straight-in connections to diffuser necks, report this condition and measure airflow in each throw direction. If airflow in any throw direction deviates from average airflow in all four directions by more than 30 percent, then inform the contractor that corrections need to be made to the diffuser connections.
- a. Similarly observe and report any other improper connection to diffusers, registers, and grilles, that results in inadequate airflow or improper air distribution.

E. Performance and Capacity Checks: Submit complete equipment performance documentation and test measurements in accordance with AABC "National Standards for Total System Balance" and AABC "Test and Balance Procedures" to demonstrate that the following equipment is operating in accordance with all scheduled performance criteria and manufacturer's published ratings:

- 1. Coils: Report complete coil performance data, including coil size and air pressure drop, and calculated airside and wet side heat transfer in Btuh. Maintain scheduled entering water temperatures during tests. Control upstream heating and cooling coils to maintain scheduled entering air temperatures during tests. At zone heating coils, if excessive heat transfer is measured, reduce scheduled coil GPM to limit leaving air temperature (LAT) to the scheduled LAT +5° F. At zone heating coils, if deficient heat transfer is measured, increase scheduled coil GPM to obtain scheduled heat transfer. Report final GPM and thermal performance.

3.4 COORDINATION WITH HVAC CONTROLS

A. Become thoroughly familiar with HVAC Controls Sequence of Operation.

- 1. Where sequences require establishment of minimum and maximum air flows, multiple setpoints, reset schedules, or other variable conditions, furnish all testing and balancing necessary to establish required setpoints and fully balance systems under all possible operating conditions.
- 2. Report measurements under all operating conditions as necessary to document proper system operation under all specified modes of operation.

B. Check the following:

1. All control devices are properly calibrated. Make temperature and pressure readings as necessary to verify calibration.
 2. Room temperature sensors and thermostats are installed to avoid erratic operation due to supply diffuser throws, drafts, or cold walls.
 3. Automatic controllers and thermostats operate the correct control valves. Controller, thermostat, and control valve actions are correct. Control valves are fully closed at the appropriate controller signal.
 4. Sensors are properly positioned to read intended temperatures.
 5. Inappropriate simultaneous heating and cooling does not occur.
 6. Setpoints meet the intent of the Sequence of Operation.
 7. System components operate safely.
- C. At the end of each phase of work, in the final test and balance report for that phase, include complete checkout spreadsheets which document control system checking specified above. Spreadsheets shall be computer generated and should include sensor and actual readings, device tag numbers, system, location, ranges, and other information.

3.5 ACCEPTANCE TESTING

- A. Cooperate as necessary and assist in performing test runs of HVAC systems as specified in Section 23 00 00 - General Mechanical Requirements.

3.6 FINAL ACCEPTANCE

- A. At the time of final inspection, the Test and Balance Agency shall recheck, in the presence of the Owner's Representative, specific and random selections of data; i.e., water and air quantities, as recorded in the final test and balance report.
- B. Points and areas for recheck shall be selected by the Owner's Representative.
- C. Measurement and test procedures shall be the same as approved for the work.
- D. Selections for recheck will not normally exceed 25 percent (25%) of the total number tabulated in the final report, except that 100 percent (100%) of air inlets and outlets in sensitive areas will be checked.
- E. If random tests elicit a measured flow deviation of ten percent (10%) or more from that recorded in the final test and balance report in ten percent (10%) or more of the selected recheck stations, the report shall be automatically rejected. In the event the report is rejected, all systems shall be readjusted and tested, new data recorded, a new test and balance report submitted, and new inspection tests made, all at no additional cost to the Owner.
- F. Following final acceptance of the test and balance report, final settings of all balancing valves, splitters, dampers, and other adjustment devices shall be permanently marked by the Test and Balance Agency, so that adjustment can be restored if disturbed at any time. Final balancing valve and damper positions shall be recorded in the final test and balance report.

END OF SECTION 23 99 00

SECTION 26 05 11

REQUIREMENTS FOR ELECTRICAL INSTALLATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes general requirements for accomplishing electrical work.

1.2 RELATED SECTIONS

- A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Manufacturer name, description, and/or catalog number to show intended function and quality specified products.
- B. Manufacturers
 - 1. Provide only equipment specified in the Contract Documents or approved by addendum. Manufacturer's catalog numbers and descriptions establish the quality of product required.
 - 2. Facilities and Infrastructure equal may be substituted.

2.2 QUALITY ASSURANCE

- A. All materials shall be new, unless noted otherwise. Properly store all materials and equipment for protection from physical damage or damage due to corrosion.
- B. Review accessibility of equipment for operation, maintenance and repair prior to installation. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Equipment Manufacturer Qualifications
 - 1. Equipment manufacturers shall have at least 10 year experience in manufacturing products and accessories similar to those for such projects, with a record of successful in-service performance.

PART 3 - INSTALLATIONS

3.1 SAFETY AND PROTECTION

- A. Electrical Safety Rules below shall be followed:
 - 1. Electrical circuits operating at over 300 volts, phase to ground, or circuits serviced by a trans-

former over 150 kVA, shall be de-energized before proceeding with the Work.

2. Electrical circuits shall be considered de-energized only under the following conditions:
 - a. Switches connecting subject circuit to the energy supply are observed in the “open” position with an air break, and safety-tagged in the “open” position.
 - b. Electrically operated switches are visibly “open”, blocked or racked in the “open” position, and safety-tagged “open”.
 - c. If the supply circuit break is not visible and clearly identified, the circuit shall be grounded. If the ground connection is not within sight of the work area, the ground connection shall be safety-tagged before proceeding with the Work.
 - d. Oil switches are observed “open” in a sight window and safety-tagged “open”, or fuse carrier is removed in oil fuse cutouts and safety-tagged “open”.
3. Use of Red Safety Tags
 - a. For protection of personnel working on circuits, safety tags shall be filled out and attached to any opened switch or equipment.
 - b. Safety tags shall be removed only the by the airport facilities employee who placed the tag, or by another airport facilities employee who has been authorized to remove the tag in writing by the employee who placed the tag. The airport facilities manager or his designated representative may authorize removal of a safety tag placed by an employee who is not available to remove the tag at the time of need only after carefully checking that the circuit is ready to be energized.
 - c. Equipment with a safety tag attached shall not be operated, and connections with a safety tag attached shall not be changed.
4. Insulated cables, operated at over 300 volts to ground, shall be handled when energized only with rubber gloves tested to 22,000 volts by an approved testing laboratory.
5. Insulated cables that have been in operation shall be cut only with grounded cable shears, or shall be grounded by driving a grounded sharp tool through the shielding and the conductors before cutting.
6. All personnel working around energized electrical equipment operating at over 750 volts shall wear standard insulated, non-conducting hard hats and shall wear no garments with metallic zipper fasteners.
7. Ladders used in any electrical work shall be wood or fiberglass construction.
8. All panel boards, junction boxes, electrical devices and other similar equipment which is being worked on and which have exposed live wires, bus bars, or terminals operating above 50 volts shall be covered adequately for the voltage with an electrical insulating material and labeled with a “Caution” sign when Contractor personnel are not present. The Caution sign shall advise that exposed electrical parts are behind the temporary protective cover.
9. Contractors engaged on airport projects or working on airport property shall be governed by airport rules, except that all safety tags shall be placed or removed by the airport facilities manager or his designated representative. The Contractor shall designate a supervisor for all contract personnel and operations. This supervisor shall be on the job whenever contract operations are in progress.

3.2 ELECTRICAL EQUIPMENT INSTALLATION

- A. Comply with airport standards for environmental regulatory requirements, quality control, construction facilities and temporary controls, traffic control, access control, and signage requirements.
- B. Provide electrical connection of all equipment having electrical requirements. Make final connections for all Owner-furnished equipment.
 - 1. Make electrical connections in accordance with manufacturer's written instructions, with recognized industry practices, and complying with requirements of the California Electrical Code.
 - 2. Verify all electrical loads (voltage, phase, full load amperes, number and point of connections, minimum circuit capacity, etc.) for equipment furnished under other divisions of this specification by reviewing respective shop drawings furnished under each division.
 - 3. Meet with each subcontractor furnishing equipment requiring electrical service to review electrical characteristics for each equipment item before rough in begins. Report any variances from electrical characteristics noted on the electrical drawings to the Engineer before proceeding with rough-in work.
- C. California Electrical Code Compliance
 - 1. Comply with applicable portions of California Electrical Code as to the type of products used and provisions for electrical power connections.
- D. Underwriters Laboratories Acceptance
 - 1. All material and equipment within the scope of the UL Re-examination service shall be approved by Underwriters Laboratories, Inc. for the purpose for which they are used and shall bear their label. Any variation to this requirement must be approved by the Authority Having Jurisdiction.
- E. Cutting and Patching
 - 1. Provide and coordinate the locations of all openings required in the building construction for installation of the Work.
 - 2. Drill penetrations required through existing concrete slabs or walls with a diamond core drill. In no case shall any structural member be cut.
 - 3. Provide approved sleeves as required for electrical penetrations through floors and walls. Seal all openings around conduits in sleeves with a material of equal fire rating as the surface penetrated.
 - 4. Obtain written approval from a licensed Structural Engineer prior to cutting any reinforcing bars.
- F. Equipment Accessibility
 - 1. Comply with applicable codes and install equipment to be accessible for operation, maintenance or repair. Equipment deemed inaccessible shall be relocated as directed.
- G. Electrical Work Exposed to Weather
 - 1. Provide weatherproof enclosures and corrosion protection for all ferrous metal portions of electrical work exposed to weather, including conduit, clamps, supports and hardware.

3.3 PROJECT FINALIZATION

- A. Fully test and adjust all equipment installed under this specification and demonstrate its proper operation.
 - 1. Testing that involves use of instruments other than meggers and volt-ohm meters shall be performed by an independent testing agency according to the requirements of specific sections.

END OF SECTION 26 05 11

SECTION 26 05 19

LOW VOLTAGE POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes requirements for insulated copper conductors for general power and control use at voltages below 600 Volts, AWG sizes #14 through 750 kcmil.
- B. Insulated conductors shall comply with NFPA 70 and carry UL label.
- C. 75° C is the standard design temperature for all conductors unless otherwise required by engineering considerations.
- D. All conductors #14 and larger shall be copper stranded unless otherwise required by engineering considerations.
- E. Use 600-Volt rated cable for all 208-Volt applications.
- F. All conductors shall be new.
- G. FLEXIBLE TYPE METAL CLAD (MC) WIRING SHALL NOT BE USED FOR GENERAL WIRING PURPOSES.

1.2 RELATED SECTIONS

- A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. American Insulated Wire
- B. Halston Wire
- C. South Wire
- D. Carol Cable or Approved Equal

2.2 GENERAL BUILDING WIRE APPLICABLE TO THE MAJORITY OF APPLICATIONS

- A. THHN/THWN stranded copper wire is standard for all wet and dry indoor locations.
- B. NO ALUMINUM WIRE ALLOWED.

- C. Grounding conductors: #6 AWG and larger: stranded copper, bare soft drawn as required. #8 AWG and smaller: stranded copper with green insulation.

2.3 SPLICES AND CONNECTORS

- A. For #14 AWG through #10 AWG wire sizes, use insulated connectors rated for use on stranded wire spring wire connectors or insulated compression connectors
- B. For #8 AWG wire, use solderless pressure connectors with insulating sleeves.
- C. For #6 AWG and larger cable use split bolt connectors with manufactured insulation covers or tape sufficient to provide 150% insulation level. As an option compression connectors are acceptable using compression dies designed for the exact connector being used. Provide insulating sleeves manufactured specifically for the connector being used.

PART 3 INSTALLATIONS

3.1 GENERAL

- A. “National Electrical Installation Standards” (NEIS), published by the National Electrical Contractors Association (NECA) shall be used as a reference to establish a standard for quality of installation workmanship.
- B. Make conductor lengths for parallel circuits equal by actual length comparison before installing in conduit.
- C. Smallest wire sizes allowed are #12 AWG for lighting and power and #14 AWG for controls.
- D. Provide phasing tests for proper rotation of all motors.
- E. No splices in raceways or inaccessible locations. Splice only in junction or outlet boxes.
- F. Torque all bolted terminations per manufacturers recommendations, or in the absence of these recommendations, refer to UL 486B (reprinted in National Electrical Code Handbook Article 110-14.)
- G. For bolted connections in equipment, verify that applying a spot of red paint to each bolt head such that the paint will be visibly disturbed if the bolt is disturbed has properly torqued the connections. Use copper lugs only on main circuit breakers and feeder breakers. No cu/al lugs allowed.
- H. As a standard practice, control conductors are to be routed in separate raceways from power conductors. When engineering considerations dictate, control conductors may be routed in power raceway under the following conditions:
 - 1. All conductors must have a voltage rating for the highest voltage in the raceway.
 - 2. The largest power conductor in the raceway is #4 AWG.

3.2 COLOR CODING

- A. Color Coding Method
 - 1. Provide colored insulation when available. (normally wire sized #8 AWG and smaller)

2. Provide a 2" wide (minimum) band of colored plastic tape at all terminations. (Scotch No. 33 all-weather vinyl plastic tape)

B. Color Coding and Phasing

1. Match existing.

3.3 TESTING

- A. Megger testing for one half minute is required for all 600-Volt insulated wire #2 AWG and larger using a 500-Volt Megger for 208-Volt systems and a 1000-Volt Megger for 480-Volt systems. Test continuity between conductors and from each conductor to ground before initial energization of all service equipment, switchgear, switchboards, MCCs (including motors) and panelboards. Record test information for all cables tested on attached report.
- B. Using a Volt/Ohm meter, test all power conductors below #2 AWG for continuity to ground.
- C. Test circuits for motor rotation, phase to phase sequence.

3.4 ALUMINUM CONDUCTORS

- A. Contractors in possession of aluminum conductors in their vehicles, storage or work areas may be removed from the site until such material is no longer on the premises.

END OF SECTION 26 05 19

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits and systems.
- B. Comply with NFPA 70 (NEC), UL 467.
- C. Comply with requirements of Authority Having Jurisdiction.
- D. Provide products which are UL listed and labeled.
- E. Reference: IEEE Green Book "Grounding", IEEE Std. 142.

1.2 RELATED SECTIONS

- A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Thomas & Betts
- B. O-Z/Gedney Co.
- C. ILSCO
- D. Lyncole XIT Grounding
- E. Erico Inc.
- F. Raco, Inc.; Division of Hubbell

2.2 CONDUCTORS

- A. Equipment Grounding Conductors: Insulated with green-colored insulation in sizes available, otherwise provide two inch band of green plastic marking tape at each termination.
- B. Grounding Electrode Conductors: Stranded Cable.
- C. Bare Copper Conductors:
 - 1. Assembly of Stranded Conductors: ASTM B 8

- D. Copper Bonding Conductors
 - 1. Bonding Conductor: No. 4 or No. 6 AWG stranded copper conductor
 - 2. Bonding Jumpers: Bare copper tape or braided bare copper
- E. Bonding Straps: Soft copper
- F. Ground Bus: Bare, annealed-copper bars of rectangular cross section
- G. Connectors
 - 1. Pressure Connectors: High-conductivity-plated units
 - 2. Bolted Connectors: Heavy-duty, bolted-pressure type only
 - 3. Welded Connectors: Exothermic welded type

PART 3 INSTALLATIONS

3.1 GENERAL

- A. Comply with CEC Article 250.
- B. Use insulated equipment grounding conductor in raceways.
- C. Route grounding conductors along shortest and straightest paths possible.
- D. Install bonding straps and jumpers so vibration by equipment mounted on vibration hangers and supports is not transmitted to rigidly mounted equipment.
- E. Provide bonding jumper from main service equipment to building main water service. Use braided type bonding jumpers to electrically bypass water meters.
- F. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fan, blowers, electric heaters and air cleaners.
- G. Bond each aboveground portion of gas piping system upstream from equipment shutoff valve.
- H. Make connections so as to minimize galvanic corrosion or electrolysis. Use compression connections for all embedded and underground connections.
- I. Terminate metallic raceways at metal housings, not having a solid mechanical and electrical connection to housing, with a grounding bushing.

3.2 EQUIPMENT GROUNDING CONDUCTORS

- A. Provide insulated equipment grounding conductors from the ground bus in all switchboards, and panelboards to all electrical equipment and devices.
- B. Signal and Communication Systems: Provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet and central equipment location of telephone, alarm, voice and data, and other communication systems..

County of San Mateo – Department of Public Works
San Mateo Medical Center (SMMC)
SMMC Prevent Self Harm & Ligature Project No. P30F1
OSHPD No. S191567-41-00

END OF SECTION 26 05 26

SECTION 26 05 33

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes requirements for raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. Raceways include the following:
 - 1. Rigid metal conduit (RMC). (NEC Article 346).
 - 2. Electrical metallic tubing (EMT). (NEC Article 348).
 - 3. Flexible metal conduit (FMC). (NEC Article 350.)
 - 4. Liquidtight flexible conduit (LFMC). (NEC Article 351)
 - 5. Metal Wireway. (NEC Article 362-A).
 - 6. Surface metal raceways. (NEC Article 352-A).
 - 7. Intermediate metallic conduit (IMC) shall not be used.
- C. Boxes, Enclosures and Cabinets include the following:
 - 1. Device boxes.
 - 2. Outlet boxes.
 - 3. Pull and junction boxes.
 - 4. Cabinets and hinged cover enclosures.
- D. Quality Assurance
 - 1. Conform to noted ANSI and NEMA standards, and comply with NFPA 70 "National Electrical Code" for components and installation.
 - 2. UL Compliance: Provide products, which are UL-classified and labeled.
 - 3. Comply with NECA "Standard of Installation".
 - 4. Coordinate layout and installation of raceway and boxes with other construction elements to ensure adequate headroom, working clearance, and access.

1.2 RELATED SECTIONS

- A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit (RMC): ANSI C80.1
- B. Electrical Metallic Tubing (EMT) and Fittings: ANSI C80.3 with steel, compression-type fittings. NO SETSCREWS WILL BE ALLOWED.
- C. Flexible Metal Conduit (FMC): Zinc-coated steel
- D. Liquidtight Flexible Metal Conduit (LFMC): Flexible steel conduit with PVC jacket.
- E. Fittings: NEMA FB 1, compatible with conduit/tubing materials

2.2 OUTLET AND DEVICE BOXES

- A. Sheet Metal Boxes: NEMA OS 1
- B. Cast Metal Boxes: NEMA FB 1, cast ferrous alloy box with gasketed cover and threaded hubs

2.3 PULL AND JUNCTION BOXES

- A. Small Sheet Metal Boxes: NEMA OS 1, galvanized steel
- B. Cast Metal Boxes: NEMA FB 1, cast aluminum with gasketed cover
- C. Sheet steel gauge requirements (any direction)
 - 1. 24" or less: 14 USS gauge
 - 2. 24" to 36": 12 USS gauge

2.4 ENCLOSURES AND CABINETS

- A. Hinged 110o Swing Opening Cover Enclosures: NEMA 250, Type 1, steel enclosure with continuous hinge cover and flush latch, finished inside and out with manufacturer's standard enamel.
- B. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

PART 3 - INSTALLATIONS

3.1 WIRING METHODS

- A. Outdoors
 - 1. Exposed: RMC
 - 2. Boxes and Enclosures: NEMA Type 3R
- B. Indoors

1. Exposed: RMC
2. Concealed: RMC or EMT
3. Connection to Vibrating Equipment (incl. transformers and hydraulic, pneumatic or electric solenoid or motor-driven equipment): Flexible metal conduit (FMC), except in damp locations use liquid tight flexible metal conduit (LFMC)
4. Damp or Wet Locations: Rigid galvanized steel conduit
5. Boxes and Enclosures: NEMA Type 1, except in damp or wet locations use NEMA Type 4, NEMA Type 4X stainless steel (316) in corrosive locations, or NEMA Type 7 in hazardous locations

3.2 RACEWAY INSTALLATION

- A. Use 1/2" conduit size for end use devices and communications.
- B. Use 3/4" minimum conduit size for homeruns, outdoor applications and for conduit embedded in slabs.
- C. Conduit larger than 2" size containing power conductors shall be RMC. However, EMT may be used for larger conduits containing communication wiring such as telephone, fire alarm and other low-voltage systems.
- D. Conceal conduit and EMT, unless otherwise indicated, within finished walls, ceilings and floors.
- E. Maintain 6" minimum clearance between conduit and mechanical piping. Maintain 12" minimum clearance between conduit and heat sources such as flues, steam pipes, and heating appliances. Comply with NEC Article 110-16.
- F. Install horizontal raceway runs above water and steam piping.
- G. Route exposed and concealed conduit parallel and perpendicular to structure.
- H. Cut conduit square using a saw or pipe cutter, and ream it to remove burrs.
- I. Use temporary closures to prevent foreign matter from entering raceway.
- J. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2" size.
- K. Run concealed raceways, with a minimum of bends, in the shortest practical distance considering the type of building construction and obstructions.
- L. In exposed areas, raceways may be painted to match existing finishes.
- M. Raceways embedded in slabs (no aluminum):
 1. Secure raceways to reinforcing rods
 2. Space raceways laterally to prevent voids in concrete
 3. Run conduit larger than 1" trade size parallel to or at right angles to main reinforcement.
- N. Raceways in public areas shall be painted to match surroundings.

- O. Terminations: Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely, and install the locknuts with dished part against the box.
- P. Install pulls nylon #16 in empty raceways, except at sleeves and nipples.
- Q. Install raceway seal fittings according to manufacturer's written instructions.
- R. Stub up Connections:
 - 1. Extend conduits a minimum of 6" through concrete floor slab for connection to freestanding equipment.
 - 2. Install with an adjustable top or coupling threaded inside for plugs set flush with the finished floor.
 - 3. Extend conductors to equipment with RMC; FMC may be used 6" above the floor.
- S. Use maximum of 6' of flexible conduit for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Install separate ground conductor across flexible connections.
- T. Use Form 8 conduit bodies with cover and fully gasket for standard installation.
- U. Conduit raceway and boxes installation should be of the same material. Do not mix dissimilar metal due to galvanic reaction.
- V. EMT and rigid metal conduit fittings: set screws, threadless and split couplings will not be allowed.
- W. All fasteners and clamps for conduit raceway support shall use mechanical bolted type hardware.
- X. All cable shall be installed in raceway including plenum rated cable.

3.3 OUTLET BOX INSTALLATION

- A. Do not install boxes back-to-back in walls.
- B. Provide knockout closures for unused openings.
- C. Support boxes independently of conduit.
- D. Use multiple-gang boxes where more than one device is mounted together; do not use sectional boxes.
- E. Coordinate mounting heights and locations of outlets mounted above counters, benches, and back-splashes.
- F. Provide recessed outlet boxes in finished areas.
- G. Mount outlets at the following heights above finished floor:
 - 1. Wall switches: 48" to top of outlet box
 - 2. Convenience outlets: 18" to bottom of outlet box
 - 3. Telephone outlets: 18" to bottom of outlet box

- H. Provide cast outlet boxes in exterior or wet locations.

3.4 PULL AND JUNCTION BOX INSTALLATION

- A. Locate so that covers are accessible at all times.
- B. Provide pull boxes as required by NEC or as required to facilitate installation of the work.
- C. Mount and support independently of conduit.

3.5 ENCLOSURE AND CABINET INSTALLATION

- A. Install hinged cover enclosures and cabinets plumb and level. Support at each corner, minimum.

3.6 PROTECTION AND CLEANING

- A. Repair coatings, finishes, and cabinets that are damaged or deteriorated at the time of Substantial Completion as recommended by manufacturer.
- B. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches and abrasions, from outlet fittings and devices.

END OF SECTION 26 05 33

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section establishes requirements for identification of electrical materials and equipment.

1.2 RELATED SECTIONS

- A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide engraved labels and nameplates of laminated phenolic plastic 1/16-inch thick minimum, with white letters on a black background. Labels larger than 3"x5" shall be 1/8-inch thick minimum.
- B. Label emergency equipment red with white letters.
- C. Only temporary markings that are removable without damaging finish are permitted on equipment.
- D. No labeling abbreviations shall be permitted without airport approval.

2.2 IDENTIFICATION

- A. Provide 5/8-inch minimum height letters on the following equipment:
 - 1. Panelboards, and switchboards
 - 2. Special equipment housed in cabinets, on outside door
 - 3. Terminal junction boxes and data gathering panels
- B. Provide 1/4-inch minimum height letters on the following equipment:
 - 1. Disconnects and starters for motors on fixed appliances
 - 2. Duplex receptacles (self-adhesive labels indicating panel and circuit number)
 - 3. Local control panels

PART 3 - INSTALLATIONS

3.1 GENERAL

- A. Securely attach engraved labels with an or stainless steel screws.
- B. Provide nameplate on all power receptacles, equipment disconnects and control panels showing source and circuit number.
- C. Provide wire markers on each conductor in panelboards, pull boxes, junction boxes and at all load connections.
- D. Where colored conductors are not readily obtainable, use Scotch No. 35 color coding tape.

END OF SECTION 26 05 53

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes requirements for receptacles, plugs, switches, cover plates, poke-through assemblies and telephone/power service poles.

1.2 RELATED SECTIONS

- A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Specification Grade Receptacles
 - 1. Crouse Hinds
 - 2. Appleton
 - 3. Killark
- B. Ground-Fault Interrupters
 - 1. Hubbell
 - 2. Arrow Hart
 - 3. Hubbell
 - 4. Leviton
 - 5. Bryant
- C. Special Purpose Receptacles
 - 1. Crouse Hinds
 - 2. Appleton
 - 3. Killark

2.2 RECEPTACLES

- A. Provide according to NEMA designations for number of poles, voltage and Amperage required
- B. UL, CSA, or ETL label required
- C. Provide 20-ampere, duplex, industrial specification grade receptacles only. 15-AMPERE RECEPTACLES ARE NOT ACCEPTABLE.
- D. Standard colors for all receptacles are gray and ivory (except red for emergency power receptacles).
 - 1. Public Areas: gray with brushed stainless steel plate
 - 2. Office Areas: ivory with plastic matching plate

3. Colors and materials are subject to Architects special requirements.

E. GFCI (ground fault circuit interrupter) receptacles for personnel protection:

1. 5 mA trip is standard
2. All receptacles, which are downstream from a feed-through type GFCI receptacle, shall be labeled "GFCI Protected".

F. Emergency power receptacles. Red color, no exceptions

G. Locking type: Use NEMA type with rating equal to source circuit

2.3 PLUGS

A. Provide according to NEMA designations to match companion receptacles

B. UL, CSA or ETL label required.

C. Strain relief suitable for application.

2.4 SWITCHES

A. UL label required

B. Industrial specification grade for all locations.

C. Standard color is ivory subject to Architect's special requirements.

D. Quiet operation type is standard.

2.5 COVER PLATES

A. Match color to device as noted above or as otherwise required by Architect.

B. Utilize brushed stainless steel in public areas such as restrooms.

C. Utilize galvanized steel in unfinished areas.

D. Weatherproof for outdoor and damp locations, for use while still connected to cord.

PART 3 - INSTALLATIONS

3.1 GENERAL

A. Receptacles shall be labeled according to Section 26 05 53, "Electrical Identification".

B. Common receptacles shall be labeled "GFCI receptacle" when protected by an up-stream GFCI receptacle.

C. Standard Mounting Heights

1. Wall switches: 48"

2. Convenience outlets: 18”

3. Telephone outlets: 18”

4. Thermostats: 60”

D. Grounding

1. All standard and GFCI receptacles shall be grounded via a separate green equipment ground wire connected to the panelboard ground bus. Metallic raceway shall not be the sole equipment ground current path.

2. Maintain consistent polarity for power and common terminals on all receptacles. Verify by actual test.

3. Test GFCI receptacles per manufacturer’s recommendations.

END OF SECTION 26 27 26

SECTION 26 51 00

INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes requirements for interior lighting fixtures, lighting fixture components, ballasts, and lamps.
- B. Comply with NFPA 70: National Electrical Code, NFPA 101: Life Safety Code, IESNA recommended practices, ANSI, ADA where appropriate, and UL CSA or ETL listing and labeling.
- C. Lighting Fixture Selection
 - 1. Subject to compliance with the project illumination requirements.
 - 2. Products UL listed and labeled for condition of use.

1.2 RELATED SECTIONS

- A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 - PRODUCTS

2.1 LED LIGHT FIXTURES

- A. General:
 - 1. LED light fixtures shall be in accordance with IES, NFPA, UL, as shown on the drawings, and as specified.
 - 2. LED light fixtures shall be Reduction of Hazardous Substances (RoHS)-compliant.
 - 3. LED drivers shall include the following features unless otherwise indicated:
 - a. Minimum efficiency: 85% at full load.
 - b. Minimum Operating Ambient Temperature: -20° C. (-4° F.)
 - c. Input Voltage: 120 - 277V (±10%) at 60 Hz.
 - d. Integral short circuit, open circuit, and overload protection.
 - e. Power Factor: ≥ 0.95.
 - f. Total Harmonic Distortion: ≤ 20%.
 - g. Comply with FCC 47 CFR Part 15

4. LED modules shall include the following features unless otherwise indicated:
 - a. Comply with IES LM-79 and LM-80 requirements.
 - b. Minimum CRI 80 and color temperature 3000° K unless otherwise specified in LIGHTING FIXTURE SCHEDULE.
 - c. Minimum Rated Life: 50,000 hours per IES L70.
 - d. Light output lumens as indicated in the LIGHTING FIXTURE SCHEDULE.
- B. LED Downlights:
 1. Housing, LED driver, and LED module shall be products of the same manufacturer.
- C. LED Troffers:
 1. LED drivers, modules, and reflector shall be accessible, serviceable, and replaceable from below the ceiling.
 2. Housing, LED driver, and LED module shall be products of the same manufacturer.

PART 3 - INSTALLATIONS

3.1 GENERAL

- A. Fixtures shall be level, in straight lines, aligned, and coordinated with ceiling construction and other trades.
- B. Fixtures installed in suspended ceilings shall be attached to the ceiling with acceptable seismic clips (which are listed for use with the ceiling framing members and fixtures), mounted on the fixture and the suspended tees or by other means. Wires or chains shall also separately support recessed fixtures. Comply with NEC Article 410-16(c).
- C. Fixtures shall be supported by separate means such as wire or chains from the building structure and not from the ceiling system, ductwork, piping, or other systems, with the exception of fixture types to be installed in suspended ceilings. See NEC Article 370-23.
- D. Fixture installation shall comply with seismic zone 3 requirements.
- E. Aimable or focusing fixtures shall be adjusted in a manner to provide the desired effect.
- F. Manufacturer labels or monograms shall not be visible after fixture installation.
- G. Provide all accessories required for a complete and operational system.
 1. For recessed fixtures, other than T-Bar, provide plaster frames and flanges suitable for ceiling.
 2. Provide plates, barriers, or rings to cover any exposed ceiling material between fixture canopy or pan and outlet box.
- H. Do not use fixtures as a raceway for circuit conductors except for the single branch circuit supplying the fixtures. Branch circuit wiring shall not pass through an outlet box that is an integral part of an incandescent fixture unless the fixture is identified for the purpose.

- I. Flush and recessed fixtures without an integral outlet box shall have a tap connection conductor, with insulation rated for 90°C, run from fixture terminal connection to an outlet box at least 1-foot from the fixture.
- J. Fixture whips shall be between 4' and 6' long.
- K. Wiring within fixtures shall be neatly arranged and protected from damage.

END OF SECTION 26 51 00