



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

**Division of Facilities Construction and Management**

**DFCM**

## **STANDARD LOW BID PROJECT**

**February 19, 2008**

# **MULTI-PURPOSE/SUCCESS ACADEMY REMODEL**

## **SOUTHERN UTAH UNIVERSITY CEDAR CITY, UTAH**

DFCM Project Number 07035730

Sargent Design Group  
2390 West Highway 56, Suite 4A  
Cedar City, Utah 84720

# TABLE OF CONTENTS

	<u>Page Numbers</u>
Title Sheet	1
Table of Contents	2
Notice to Contractors	3
Project Description	4
Project Schedule	5
Bid Form	6
Instructions to Bidders	8
Bid Bond	12
Instructions and Subcontractors List Form	13
Contractor's Agreement	16
Performance Bond	21
Payment Bond	22
Certificate of Substantial Completion	23
General Contractor Past Performance Rating	

Current copies of the following documents are hereby made part of these contract documents by reference. These documents are available on the DFCM web site at <http://dfcm.utah.gov> or are available upon request from DFCM.

DFCM General Conditions dated May 25, 2005.

DFCM Application and Certification for Payment dated May 25, 2005.

Technical Specifications :

Drawings:

**The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at <http://dfcm.utah.gov>**

## NOTICE TO CONTRACTORS

Sealed bids will be received by the Division of Facilities Construction and Management (DFCM) for:

**MULTI-PURPOSE/SUCCESS ACADEMY REMODEL**  
**SOUTHERN UTAH UNIVERSITY – CEDAR CITY, UTAH**  
**DFCM PROJECT NO: 07035730**

Bids will be in accordance with the Contract Documents that will be available at 9:00 AM on Tuesday, February 19, 2008, and distributed in electronic format only on CDs from DFCM, 4110 State Office Building, Salt Lake City, Utah and on the DFCM web page at <http://dfcm.utah.gov>. For questions regarding this project, please contact Jeff Reddoor, DFCM, at 801-971-9830. No others are to be contacted regarding this bidding process. The construction budget for this project is \$ 523,788.00.

A **mandatory** pre-bid meeting will be held at 11:00 AM on Wednesday, February 27, 2008 at the Physical Plant Building, Southern Utah University, 351 West Center Street, Cedar City, Utah. All bidders wishing to bid on this project are required to attend this meeting.

Bids will be received until the hour of 2:30 PM on Thursday, March 6, 2008 at DFCM, 4110 State Office Building, Salt Lake City, Utah 84114. Bids will be opened and read aloud in the DFCM Conference Room, 4110 State Office Building, Salt Lake City, Utah. NOTE: Bids must be received at 4110 State Office Building by the specified time.

A bid bond in the amount of five percent (5%) of the bid amount, made payable to the Division of Facilities Construction and Management on DFCM's bid bond form, shall accompany the bid.

The Division of Facilities Construction and Management reserves the right to reject any or all bids or to waive any formality or technicality in any bid in the interest of DFCM.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT  
Marla Workman, Contract Coordinator  
4110 State Office Building, Salt Lake City, Utah 84114

## **PROJECT DESCRIPTION**

The SUU Success Academy Project includes the following work:

- demolition of existing walls, flooring and restrooms
- construction of new walls
- installation of new flooring
- installation of new doors and frames
- replacement of existing doors and frames
- construction of fire rated walls
- installation of high school lab cabinets
- installation of new plumbing equipment and toilet room accessories
- installation of new HVAC system
- installation of sprinkler system.

**PROJECT SCHEDULE**

<b>PROJECT NAME:</b>		<b>MULTI-PURPOSE/SUCCESS ACADEMY REMODEL</b>		
		<b>SOUTHERN UTAH UNIVERSITY – CEDAR CITY, UTAH</b>		
<b>DFCM PROJECT NO.</b>		<b>07035730</b>		
<b>Event</b>	<b>Day</b>	<b>Date</b>	<b>Time</b>	<b>Place</b>
Bidding Documents Available	Tuesday	February 19, 2008	9:00 AM	DFCM 4110 State Office Bldg SLC, UT and the DFCM web site *
<b>Mandatory</b> Pre-bid Site Meeting	Wednesday	February 27, 2008	11:00 AM	Physical Plant Building Southern Utah University 351 West Center Street. Cedar City, UT
Last Day to Submit Questions	Friday	February 29, 2008	3:00 PM	Jeff Reddoor – DFCM E-mail <a href="mailto:jreddoor@utah.gov">jreddoor@utah.gov</a>
Addendum Deadline (exception for bid delays)	Tuesday	March 4, 2008	2:00 PM	DFCM web site *
Prime Contractors Turn In Bid and Bid Bond	Thursday	March 6, 2008	2:30 PM	DFCM 4110 State Office Bldg SLC, UT
Sub-contractor List Due	Friday	March 7, 2008	2:30 PM	DFCM 4110 State Office Bldg SLC, UT Fax 801-538-3677
Substantial Completion Date	Friday	July 25, 2008	5:00 PM	

\* **NOTE:** DFCM's web site address is <http://dfcm.utah.gov>



## BID FORM

NAME OF BIDDER \_\_\_\_\_ DATE \_\_\_\_\_

To the Division of Facilities Construction and Management  
4110 State Office Building  
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Instructions to Bidders", in compliance with your invitation for bids for the **MULTI-PURPOSE/SUCCESS ACADEMY REMODEL – SOUTHERN UTAH UNIVERSITY – CEDAR CITY, UTAH – DFCM PROJECT NO. 07035730** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: \_\_\_\_\_

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_)

(In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by **July 25, 2008**, should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **\$1,000.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of \_\_\_\_\_

The undersigned Contractor's License Number for Utah is \_\_\_\_\_.

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract.

The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable 100% Performance and Payment bonds are not delivered within the time set forth.

Type of Organization:

\_\_\_\_\_  
(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

\_\_\_\_\_

Respectfully submitted,

\_\_\_\_\_  
Name of Bidder

ADDRESS:

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

\_\_\_\_\_  
Authorized Signature

# INSTRUCTIONS TO BIDDERS

## 1. Drawings and Specifications, Other Contract Documents

Drawings and Specifications, as well as other available Contract Documents, may be obtained as stated in the Invitation to Bid.

## 2. Bids

Before submitting a bid, each contractor shall carefully examine the Contract Documents, shall visit the site of the Work; shall fully inform themselves as to all existing conditions and limitations; and shall include in the bid the cost of all items required by the Contract Documents. If the bidder observes that portions of the Contract Documents are at variance with applicable laws, building codes, rules, regulations or contain obvious erroneous or uncoordinated information, the bidder shall promptly notify the DFCM Representative and the necessary changes shall be accomplished by Addendum.

The bid, bearing original signatures, must be typed or handwritten in ink on the Bid Form provided in the procurement documents and submitted in a sealed envelope at the location specified by the Invitation to Bid prior to the deadline for submission of bids.

Bid bond security, in the amount of five percent (5%) of the bid, made payable to the Division of Facilities Construction and Management, shall accompany bid. **THE BID BOND MUST BE ON THE BID BOND FORM PROVIDED IN THE PROCUREMENT DOCUMENTS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID.**

If the bid bond security is submitted on a bid bond form other than DFCM's required bid bond form, and the bid security meets all other legal requirements, the bidder will be allowed to provide an acceptable bid bond by the close of business on the next business day following notification by DFCM of submission of a defective bid bond security. **NOTE: A cashier's check cannot be used as a substitute for a bid bond.**

## 3. Contract and Bond

The Contractor's Agreement will be in the form found in the specifications. The Contract Time will be as indicated in the bid. The successful bidder, simultaneously with the execution of the Contract Agreement, will be required to furnish a performance bond and a payment bond, both bearing original signatures, upon the forms provided in the procurement documents. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the contract sum and secured from a company that meets the requirements specified in the requisite forms. Any bonding requirements for subcontractors will be specified in the Supplementary General Conditions.

**4. Listing of Subcontractors**

Listing of Subcontractors shall be as summarized in the “Instructions and Subcontractor’s List Form”, which are included as part of these Contract Documents. The Subcontractors List shall be delivered to DFCM or faxed to DFCM at (801)538-3677 within 24 hours of the bid opening. Requirements for listing additional subcontractors will be listed in the Contract Documents.

DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements is subject to a debarment hearing and may be debarred from consideration for award of contracts for a period of up to three years.

**5. Interpretation of Drawings and Specifications**

If any person or entity contemplating submitting a bid is in doubt as to the meaning of any part of the drawings, specifications or other Contract Documents, such person shall submit to the DFCM Project Manager a request for an interpretation thereof. The person or entity submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addenda posted on DFCM’s web site at <http://dfcm.utah.gov>. Neither the DFCM nor A/E will be responsible for any other explanations or interpretations of the proposed documents. A/E shall be deemed to refer to the architect or engineer hired by DFCM as the A/E or Consultant for the Project.

**6. Addenda**

Addenda will be posted on DFCM’s web site at <http://dfcm.utah.gov>. Contractors are responsible for obtaining information contained in each addendum from the web site. Addenda issued prior to the submittal deadline shall become part of the bidding process and must be acknowledged on the bid form. Failure to acknowledge addenda may result in disqualification from bidding.

**7. Award of Contract**

The Contract will be awarded as soon as possible to the lowest, responsive and responsible bidder, based on the lowest combination of base bid and acceptable prioritized alternates, provided the bid is reasonable, is in the interests of the State of Utah to accept and after applying the Utah Preference Laws in U.C.A. Title 63, Chapter 56. DFCM reserves the right to waive any technicalities or formalities in any bid or in the bidding. Alternates will be accepted on a prioritized basis with Alternate 1 being highest priority, Alternate 2 having second priority, etc.

**8. DFCM Contractor Performance Rating**

As a contractor completes each DFCM project, DFCM, the architect/engineer and the using agency will evaluate project performance based on the enclosed “DFCM Contractor Performance Rating” form. The ratings issued on this project will not affect this project but may affect the award on future projects.

**9. Licensure**

The Contractor shall comply with and require all of its subcontractors to comply with the license laws as required by the State of Utah.

**10. Permits**

In concurrence with the requirements for permitting in the General Conditions, it is the responsibility of the Contractor to obtain the fugitive dust plan requirements from the Utah Division of Air Quality and the SWPPP requirements from the Utah Department of Environmental Quality and submit the completed forms and pay any permit fee that may be required for this specific project. Failure to obtain the required permit may result in work stoppage and/or fines from the regulating authority that will be the sole responsibility of the Contractor. Any delay to the project as a result of any such failure to obtain the permit or noncompliance with the permit shall not be eligible for any extension in the Contract Time.

**11. Right to Reject Bids**

DFCM reserves the right to reject any or all Bids.

**12. Time is of the Essence**

Time is of the essence in regard to all the requirements of the Contract Documents.

**13. Withdrawal of Bids**

Bids may be withdrawn on written request received from bidder prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

**14. Product Approvals**

Where reference is made to one or more proprietary products in the Contract Documents, but restrictive descriptive materials of one or more manufacturer(s) is referred to in the Contract Documents, the products of other manufacturers will be accepted, provided they equal or exceed the standards set forth in the drawings and specifications and are compatible with the intent and purpose of

the design, subject to the written approval of the A/E. Such written approval must occur prior to the deadline established for the last scheduled addenda to be issued. The A/E's written approval will be in an issued addendum. If the descriptive material is not restrictive, the products of other manufacturers specified will be accepted without prior approval provided they are compatible with the intent and purpose of the design as determined by the A/E.

**15. Financial Responsibility of Contractors, Subcontractors and Sub-subcontractors**

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the contractor, subcontractor or sub-subcontractor.

**16. Debarment**

By submitting a bid, the Contractor certifies that neither it nor its principals, including project and site managers, have been, or are under consideration for, debarment or suspension, or any action that would exclude such from participation in a construction contract by any governmental department or agency. If the Contractor cannot certify this statement, attach to the bid a detailed written explanation which must be reviewed and approved by DFCM as part of the requirements for award of the Project.



**Division of Facilities Construction and****INSTRUCTIONS AND SUBCONTRACTORS LIST FORM**

The three low bidders, as well as all other bidders that desire to be considered, are required by law to submit to DFCM within 24 hours of bid opening a list of **ALL** first-tier subcontractors, including the subcontractor's name, bid amount and other information required by Building Board Rule and as stated in these Contract Documents, based on the following:

**DOLLAR AMOUNTS FOR LISTING**

**PROJECTS UNDER \$500,000: ALL FIRST-TIER SUBS \$20,000 OR OVER MUST BE LISTED**  
**PROJECTS \$500,000 OR MORE: ALL FIRST-TIER SUBS \$35,000 OR OVER MUST BE LISTED**

- Any additional subcontractors identified in the bid documents shall also be listed.
- The DFCM Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law.
- List subcontractors for base bid as well as the impact on the list that the selection of any alternate may have.
- Bidder may not list more than one subcontractor to perform the same work.
- If there are no subcontractors for the job that are required to be reported by State law (either because there are no subcontractors that will be used on the project or because there are no first-tier subcontractors over the dollar amounts referred to above), then you do not need to submit a sublist. If you do not submit a sublist, it will be deemed to be a representation by you that there are no subcontractors on the job that are required to be reported under State law. At any time, DFCM reserves the right to inquire, for security purposes, as to the identification of the subcontractors at any tier that will be on the worksite.

**LICENSURE:**

The subcontractor's name, the type of work, the subcontractor's bid amount, and the subcontractor's license number as issued by DOPL, if such license is required under Utah Law, shall be listed. Bidder shall certify that all subcontractors, required to be licensed, are licensed as required by State law. A subcontractor includes a trade contractor or specialty contractor and does not include suppliers who provide only materials, equipment, or supplies to a contractor or subcontractor.

**'SPECIAL EXCEPTION':**

A bidder may list 'Special Exception' in place of a subcontractor when the bidder intends to obtain a subcontractor to perform the work at a later date because the bidder was unable to obtain a qualified or reasonable bid under the provisions of U.C.A. Section 63A-5-208(4). The bidder shall insert the term 'Special Exception' for that category of work, and shall provide documentation with the subcontractor list describing the bidder's efforts to obtain a bid of a qualified subcontractor at a reasonable cost and why the bidder was unable to obtain a qualified subcontractor bid. The Director must find that the bidder complied in good faith with State law requirements for any 'Special Exception' designation, in order for the bid to be considered. If awarded the contract, the Director shall supervise the bidder's efforts to obtain a qualified subcontractor bid. The amount of the awarded contract may not be adjusted to reflect the actual amount of the subcontractor's bid. Any listing of 'Special Exception' on the sublist form shall also include amount allocated for that work.

**GROUNDS FOR DISQUALIFICATION:**

The Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law. Director may withhold awarding the contract to a particular bidder if one or more of the proposed subcontractors are considered by the Director to be unqualified to do the Work or for

**INSTRUCTIONS AND SUBCONTRACTORS LIST FORM**  
**Page No. 2**

such other reason in the best interest of the State of Utah. Notwithstanding any other provision in these instructions, if there is a good faith error on the sublist form, at the sole discretion of the Director, the Director may provide notice to the contractor and the contractor shall have 24 hours to submit the correction to the Director. If such correction is submitted timely, then the sublist requirements shall be considered met.

**CHANGES OF SUBCONTRACTORS SPECIFICALLY IDENTIFIED ON SUBLIST FORM:**

Subsequent to twenty-four hours after the bid opening, the contractor may change its listed subcontractors only after receiving written permission from the Director based on complying with all of the following criteria.

- (1) The contractor has established in writing that the change is in the best interest of the State and that the contractor establishes an appropriate reason for the change, which may include, but not is not limited to, the following reasons: the original subcontractor has failed to perform, or is not qualified or capable of performing, and/or the subcontractor has requested in writing to be released.
- (2) The circumstances related to the request for the change do not indicate any bad faith in the original listing of the subcontractors.
- (3) Any requirement set forth by the Director to ensure that the process used to select a new subcontractor does not give rise to bid shopping.
- (4) Any increase in the cost of the subject subcontractor work is borne by the contractor.
- (5) Any decrease in the cost of the subject subcontractor work shall result in a deductive change order being issued for the contract for such decreased amount.
- (6) The Director will give substantial weight to whether the subcontractor has consented in writing to being removed unless the Contractor establishes that the subcontractor is not qualified for the work.

**EXAMPLE:**

Example of a list where there are only four subcontractors:

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONTRACTOR LICENSE #
ELECTRICAL	ABCD Electric Inc.	\$350,000.00	123456789000
LANDSCAPING	"Self" *	\$300,000.00	123456789000
CONCRETE (ALTERNATE #1)	XYZ Concrete Inc	\$298,000.00	987654321000
MECHANICAL	"Special Exception" (attach documentation)	Fixed at: \$350,000.00	(TO BE PROVIDED AFTER OBTAINING SUBCONTRACTOR)

\* Bidders may list "self", but it is not required.

**PURSUANT TO STATE LAW - SUBCONTRACTOR BID AMOUNTS CONTAINED IN THIS SUBCONTRACTOR LIST SHALL NOT BE DISCLOSED UNTIL THE CONTRACT HAS BEEN AWARDED.**



SUBCONTRACTORS LIST
FAX TO 801-538-3677

PROJECT TITLE: \_\_\_\_\_

Caution: You must read and comply fully with instructions.

Table with 4 columns: TYPE OF WORK, SUBCONTRACTOR, 'SELF' OR 'SPECIAL EXCEPTION', SUBCONTRACTOR BID AMOUNT, CONT. LICENSE #

We certify that:

- 1. This list includes all subcontractors as required by the instructions, including those related to the base bid as well as any alternates.
2. We have listed 'Self' or 'Special Exception' in accordance with the instructions.
3. All subcontractors are appropriately licensed as required by State law.

FIRM: \_\_\_\_\_

DATE: \_\_\_\_\_

SIGNED BY: \_\_\_\_\_

NOTICE: FAILURE TO SUBMIT THIS FORM, PROPERLY COMPLETED AND SIGNED, AS REQUIRED IN THESE CONTRACT DOCUMENTS, SHALL BE GROUNDS FOR OWNER'S REFUSAL TO ENTER INTO A WRITTEN CONTRACT WITH BIDDER. ACTION MAY BE TAKEN AGAINST BIDDERS BID BOND AS DEEMED APPROPRIATE BY OWNER. ATTACH A SECOND PAGE IF NECESSARY.

**CONTRACTOR'S AGREEMENT**

FOR:

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

THIS CONTRACTOR'S AGREEMENT, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as "DFCM", and \_\_\_\_\_, incorporated in the State of \_\_\_\_\_ and authorized to do business in the State of Utah, hereinafter referred to as "Contractor", whose address is \_\_\_\_\_.

WITNESSETH: WHEREAS, DFCM intends to have Work performed at \_\_\_\_\_.

WHEREAS, Contractor agrees to perform the Work for the sum stated herein.

NOW, THEREFORE, DFCM and Contractor for the consideration provided in this Contractor's Agreement, agree as follows:

**ARTICLE 1. SCOPE OF WORK.** The Work to be performed shall be in accordance with the Contract Documents prepared by \_\_\_\_\_ and entitled "\_\_\_\_\_."

The DFCM General Conditions ("General Conditions") dated May 25, 2005 on file at the office of DFCM and available on the DFCM website, are hereby incorporated by reference as part of this Agreement and are included in the specifications for this Project. All terms used in this Contractor's Agreement shall be as defined in the Contract Documents, and in particular, the General Conditions.

The Contractor Agrees to furnish labor, materials and equipment to complete the Work as required in the Contract Documents which are hereby incorporated by reference. It is understood and agreed by the parties hereto that all Work shall be performed as required in the Contract Documents and shall be subject to inspection and approval of DFCM or its authorized representative. The relationship of the Contractor to the DFCM hereunder is that of an independent Contractor.

**ARTICLE 2. CONTRACT SUM.** The DFCM agrees to pay and the Contractor agrees to accept in full performance of this Contractor's Agreement, the sum of \_\_\_\_\_ DOLLARS AND NO CENTS (\$\_\_\_\_\_.00), which is the base bid, and which sum also includes the cost of a 100% Performance Bond and a 100%

CONTRACTOR'S AGREEMENT  
PAGE NO. 2

Payment Bond as well as all insurance requirements of the Contractor. Said bonds have already been posted by the Contractor pursuant to State law. The required proof of insurance certificates have been delivered to DFCM in accordance with the General Conditions before the execution of this Contractor's Agreement.

**ARTICLE 3. TIME OF COMPLETION AND DELAY REMEDY.** The Work shall be Substantially Complete by \_\_\_\_\_. Contractor agrees to pay liquidated damages in the amount of \$\_\_\_\_\_ per day for each day after expiration of the Contract Time until the Contractor achieves Substantial Completion in accordance with the Contract Documents, if Contractor's delay makes the damages applicable. The provision for liquidated damages is: (a) to compensate the DFCM for delay only; (b) is provided for herein because actual damages can not be readily ascertained at the time of execution of this Contractor's Agreement; (c) is not a penalty; and (d) shall not prevent the DFCM from maintaining Claims for other non-delay damages, such as costs to complete or remedy defective Work.

No action shall be maintained by the Contractor, including its or Subcontractor or suppliers at any tier, against the DFCM or State of Utah for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including acts and omissions of the DFCM or its officers, employees or agents, except as expressly provided in the General Conditions. The Contractor may receive a written extension of time, signed by the DFCM, in which to complete the Work under this Contractor's Agreement in accordance with the General Conditions.

**ARTICLE 4. CONTRACT DOCUMENTS.** The Contract Documents consist of this Contractor's Agreement, the Conditions of the Contract (DFCM General Conditions, Supplementary and other Conditions), the Drawings, Specifications, Addenda and Modifications. The Contract Documents shall also include the bidding documents, including the Invitation to Bid, Instructions to Bidders/ Proposers and the Bid/Proposal, to the extent not in conflict therewith and other documents and oral presentations that are documented as an attachment to the contract.

All such documents are hereby incorporated by reference herein. Any reference in this Contractor's Agreement to certain provisions of the Contract Documents shall in no way be construed as to lessen the importance or applicability of any other provisions of the Contract Documents.

**ARTICLE 5. PAYMENT.** The DFCM agrees to pay the Contractor from time to time as the Work progresses, but not more than once each month after the date of Notice to Proceed, and only upon Certificate of the A/E for Work performed during the preceding calendar month, ninety-five percent (95%) of the value of the labor performed and ninety-five percent (95%) of the value of materials furnished in place or on the site. The Contractor agrees to furnish to the DFCM invoices for materials purchased and on the site but not installed, for which the Contractor requests payment and agrees to

safeguard and protect such equipment or materials and is responsible for safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Such evidence of labor performed and materials furnished as the DFCM may reasonably require shall be supplied by the Contractor at the time of request for Certificate of Payment on account. Materials for which payment has been made cannot be removed from the job site without DFCM's written approval. Five percent (5%) of the earned amount shall be retained from each monthly payment. The retainage, including any additional retainage imposed and the release of any retainage, shall be in accordance with UCA 13-8-5 as amended. Contractor shall also comply with the requirements of UCA 13-8-5, including restrictions of retainage regarding subcontractors and the distribution of interest earned on the retention proceeds. The DFCM shall not be responsible for enforcing the Contractor's obligations under State law in fulfilling the retention law requirements with subcontractors at any tier.

**ARTICLE 6. INDEBTEDNESS.** Before final payment is made, the Contractor must submit evidence satisfactory to the DFCM that all payrolls, materials bills, subcontracts at any tier and outstanding indebtedness in connection with the Work have been properly paid. Final Payment will be made after receipt of said evidence, final acceptance of the Work by the DFCM as well as compliance with the applicable provisions of the General Conditions.

Contractor shall respond immediately to any inquiry in writing by DFCM as to any concern of financial responsibility and DFCM reserves the right to request any waivers, releases or bonds from Contractor in regard to any rights of Subcontractors (including suppliers) at any tier or any third parties prior to any payment by DFCM to Contractor.

**ARTICLE 7. ADDITIONAL WORK.** It is understood and agreed by the parties hereto that no money will be paid to the Contractor for additional labor or materials furnished unless a new contract in writing or a Modification hereof in accordance with the General Conditions and the Contract Documents for such additional labor or materials has been executed. The DFCM specifically reserves the right to modify or amend this Contractor's Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work.

**ARTICLE 8. INSPECTIONS.** The Work shall be inspected for acceptance in accordance with the General Conditions.

**ARTICLE 9. DISPUTES.** Any dispute, PRE or Claim between the parties shall be subject to the provisions of Article 7 of the General Conditions. DFCM reserves all rights to pursue its rights and remedies as provided in the General Conditions.

**ARTICLE 10. TERMINATION, SUSPENSION OR ABANDONMENT.** This Contractor's Agreement may be terminated, suspended or abandoned in accordance with the General Conditions.

**ARTICLE 11. DFCM'S RIGHT TO WITHHOLD CERTAIN AMOUNT AND MAKE USE THEREOF.** The DFCM may withhold from payment to the Contractor such amount as, in DFCM's judgment, may be necessary to pay just claims against the Contractor or Subcontractor at any tier for labor and services rendered and materials furnished in and about the Work. The DFCM may apply such withheld amounts for the payment of such claims in DFCM's discretion. In so doing, the DFCM shall be deemed the agent of Contractor and payment so made by the DFCM shall be considered as payment made under this Contractor's Agreement by the DFCM to the Contractor. DFCM shall not be liable to the Contractor for any such payment made in good faith. Such withholdings and payments may be made without prior approval of the Contractor and may be also be prior to any determination as a result of any dispute, PRE, Claim or litigation.

**ARTICLE 12. INDEMNIFICATION.** The Contractor shall comply with the indemnification provisions of the General Conditions.

**ARTICLE 13. SUCCESSORS AND ASSIGNMENT OF CONTRACT.** The DFCM and Contractor, respectively bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement, and to partners, successors, assigns and legal representatives of such other party with respect to all covenants, provisions, rights and responsibilities of this Contractor's Agreement. The Contractor shall not assign this Contractor's Agreement without the prior written consent of the DFCM, nor shall the Contractor assign any moneys due or to become due as well as any rights under this Contractor's Agreement, without prior written consent of the DFCM.

**ARTICLE 14. RELATIONSHIP OF THE PARTIES.** The Contractor accepts the relationship of trust and confidence established by this Contractor's Agreement and covenants with the DFCM to cooperate with the DFCM and A/E and use the Contractor's best skill, efforts and judgment in furthering the interest of the DFCM; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the Work in the best and most expeditious and economic manner consistent with the interests of the DFCM.

**ARTICLE 15. AUTHORITY TO EXECUTE AND PERFORM AGREEMENT.** Contractor and DFCM each represent that the execution of this Contractor's Agreement and the performance thereunder is within their respective duly authorized powers.

**ARTICLE 16. ATTORNEY FEES AND COSTS.** Except as otherwise provided in the dispute resolution provisions of the General Conditions, the prevailing party shall be entitled to reasonable attorney fees and costs incurred in any action in the District Court and/or appellate body to enforce this Contractor's Agreement or recover damages or any other action as a result of a breach thereof.

CONTRACTOR'S AGREEMENT  
PAGE NO. 5

**IN WITNESS WHEREOF**, the parties hereto have executed this Contractor's Agreement on the day and year stated hereinabove.

**CONTRACTOR:** \_\_\_\_\_

\_\_\_\_\_  
Signature Date

Title: \_\_\_\_\_

\_\_\_\_\_  
Please type/print name clearly

State of \_\_\_\_\_)  
\_\_\_\_\_)  
County of \_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me, \_\_\_\_\_, whose identity is personally known to me (or proved to me on the basis of satisfactory evidence) and who by me duly sworn (or affirmed), did say that he (she) is the \_\_\_\_\_ (title or office) of the firm and that said document was signed by him (her) in behalf of said firm.

\_\_\_\_\_  
**Notary Public**

(SEAL)

My Commission Expires \_\_\_\_\_

APPROVED AS TO AVAILABILITY  
OF FUNDS:

**DIVISION OF FACILITIES  
CONSTRUCTION AND MANAGEMENT**

\_\_\_\_\_  
David D. Williams, Jr. Date  
DFCM Administrative Services Director

\_\_\_\_\_  
\_\_\_\_\_- Manager Date  
Capital Development/Improvements

APPROVED AS TO FORM:  
ATTORNEY GENERAL  
November 30, 2006  
By: Alan S. Bachman  
Asst Attorney General

APPROVED FOR EXPENDITURE:  
\_\_\_\_\_  
Division of Finance Date

**PERFORMANCE BOND**  
(Title 63, Chapter 56, U. C. A. 1953, as Amended)

That \_\_\_\_\_ hereinafter referred to as the "Principal" and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_ and authorized to transact business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah, hereinafter referred to as the "Obligee," in the amount of \_\_\_\_\_ DOLLARS (\$) \_\_\_\_\_ for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_, for the approximate sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which Contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall faithfully perform the Contract in accordance with the Contract Documents including, but not limited to, the Plans, Specifications and conditions thereof, the one year performance warranty, and the terms of the Contract as said Contract may be subject to Modifications or changes, then this obligation shall be void; otherwise it shall remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the state named herein or the heirs, executors, administrators or successors of the Owner.

The parties agree that the dispute provisions provided in the Contract Documents apply and shall constitute the sole dispute procedures of the parties.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the Provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**PRINCIPAL:**

\_\_\_\_\_

By: \_\_\_\_\_ (Seal)

Title: \_\_\_\_\_

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**SURETY:**

\_\_\_\_\_

By: \_\_\_\_\_ (Seal)

Attorney-in-Fact

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney in-fact of the above-named Surety Company and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My commission expires: \_\_\_\_\_

Resides at: \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

<b>Agency:</b> _____
<b>Agent:</b> _____
<b>Address:</b> _____
<b>Phone:</b> _____

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

**PAYMENT BOND**

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

**KNOW ALL PERSONS BY THESE PRESENTS:**

That \_\_\_\_\_ hereinafter referred to as the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_ authorized to do business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); with its principal office in the City of \_\_\_\_\_, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah hereinafter referred to as the "Obligee," in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_ for the approximate sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, 1953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**PRINCIPAL:**

\_\_\_\_\_

By: \_\_\_\_\_ (Seal)

Title: \_\_\_\_\_

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**SURETY:**

\_\_\_\_\_

By: \_\_\_\_\_ Attorney-in-Fact (Seal)

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My commission expires: \_\_\_\_\_  
Resides at: \_\_\_\_\_

NOTARY PUBLIC

**Agency:** \_\_\_\_\_  
**Agent:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General



CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT \_\_\_\_\_ PROJECT NO: \_\_\_\_\_

AGENCY/INSTITUTION \_\_\_\_\_

AREA ACCEPTED \_\_\_\_\_

The Work performed under the subject Contract has been reviewed on this date and found to be Substantially Completed as defined in the General Conditions; including that the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the State of Utah can occupy the Project or specified area of the Project for the use for which it is intended.

The DFCM - (Owner) accepts the Project or specified area of the Project as Substantially Complete and will assume full possession of the Project or specified area of the Project at \_\_\_\_\_ (time) on \_\_\_\_\_ (date).

The DFCM accepts the Project for occupancy and agrees to assume full responsibility for maintenance and operation, including utilities and insurance, of the Project subject to the itemized responsibilities and/or exceptions noted below:

\_\_\_\_\_

The Owner acknowledges receipt of the following closeout and transition materials:

- As-built Drawings
- O & M Manuals
- Warranty Documents
- Completion of Training Requirements

A list of items to be completed or corrected (Punch List) is attached hereto. The failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents, including authorized changes thereof. The amount of \_\_\_\_\_(Twice the value of the punch list work) shall be retained to assure the completion of the punch list work.

The Contractor shall complete or correct the Work on the list of (Punch List) items appended hereto within \_\_\_\_\_ calendar days from the above date of issuance of this Certificate. The amount withheld pending completion of the list of items noted and agreed to shall be: \$\_\_\_\_\_. If the list of items is not completed within the time allotted the Owner has the right to be compensated for the delays and/or complete the work with the help of independent contractor at the expense of the retained project funds. If the retained project funds are insufficient to cover the delay/completion damages, the Owner shall be promptly reimbursed for the balance of the funds needed to compensate the Owner.

\_\_\_\_\_ by: \_\_\_\_\_  
CONTRACTOR (include name of firm) (Signature) DATE

\_\_\_\_\_ by: \_\_\_\_\_  
A/E (include name of firm) (Signature) DATE

\_\_\_\_\_ by: \_\_\_\_\_  
USING INSTITUTION OR AGENCY (Signature) DATE

\_\_\_\_\_ by: \_\_\_\_\_  
DFCM (Owner) (Signature) DATE

**General Contractor Performance Rating Form**

Project Name:		DFCM Project#	
Contractor: <small>(ABC Construction, John Doe, 111-111-1111)</small>	A/E: <small>(ABC Architects, Jane Doe, 222-222-2222)</small>	Original Contract Amount:	Final Contract Amount:
DFCM Project Manager:		Contract Date:	
Completion Date:		Date of Rating:	

Rating Guideline	QUALITY OF PRODUCT OR SERVICES	COST CONTROL	TIMELINESS OF PERFORMANCE	BUSINESS RELATIONS
<b>5-Exceptional</b>	Contractor has demonstrated an exceptional performance level in any of the above four categories that justifies adding a point to the score. Contractor performance clearly exceeds the performance levels described as "Very Good"			
<b>4-Very Good</b>	Contractor is in compliance with contract requirements and/or delivers quality product/service.	Contractor is effective in managing costs and submits current, accurate, and complete billings	Contractor is effective in meeting milestones and delivery schedule	Response to inquiries, technical/service/administrative issues is effective
<b>3-Satisfactory</b>	Minor inefficiencies/errors have been identified	Contractor is usually effective in managing cost	Contractor is usually effective in meeting milestones and delivery schedules	Response to inquires technical/service/administrative issues is somewhat effective
<b>2-Marginal</b>	Major problems have been encountered	Contractor is having major difficulty managing cost effectively	Contractor is having major difficulty meeting milestones and delivery schedule	Response to inquiries, technical/service/administrative issues is marginally effective
<b>1-Unsatisfactory</b>	Contractor is not in compliance and is jeopardizing achievement of contract objectives	Contractor is unable to manage costs effectively	Contractor delays are jeopardizing performance of contract objectives	Response to inquiries, technical/service/administrative issues is not effective

<b>1. Rate Contractors quality of workmanship, management of sub contractor performance, project cleanliness, organization and safety requirement.</b>	<b>Score</b>
<u>Agency Comments:</u>	
<u>A &amp; E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

<b>2. Rate Contractor administration of project costs, change orders and financial management of the project budget.</b>	<b>Score</b>
<u>Agency Comments:</u>	
<u>A &amp; E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

<b>3. Rate Contractor's performance and adherence to Project Schedule, delay procedures and requirements of substantial completion, inspection and punch-list performance.</b>	<b>Score</b>
<u>Agency Comments:</u>	
<u>A &amp; E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

<b>4. Evaluate performance of contractor management team including project manager, engineer and superintendent also include in the rating team's ability to work well with owner, user agency and consultants.</b>	<b>Score</b>
<u>Agency Comments:</u>	
<u>A &amp; E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

5. Rate success of Contractor's management plan, completion of the plans mitigation of project risks and performance of value engineering concepts.	Score
<u>Agency Comments:</u>	
<u>A &amp; E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

<b>Signed by:</b>	<b>Date:</b>	<b>Mean Score</b>
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**Additional Comments:**

**TABLE of CONTENTS**  
**BIDDING REQUIREMENTS**

**SPECIFICATIONS**

**DIVISION 01 - GENERAL REQUIREMENTS**

**01200 PRICE & PAYMENT PROCEDURES**

**01300 ADMINISTRATIVE REQUIREMENTS**

**01600 PRODUCT REQUIREMENTS**

**01700 EXECUTION REQUIREMENTS**

**DIVISION 02 - SITE CONSTRUCTION**

**02000 SITE PREPARATION**

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02073 MINOR SITE DEMOLITION FOR REMODELING

**DIVISION 03 - CONCRETE**

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**Not Used**

**DIVISION 04 - MASONRY**

**Not Used**

## **DIVISION 05 - METALS**

### **05 050 METAL FASTENING**

05051 BOLTING

### **05 100 STRUCTURAL STEEL**

05120 STRUCTURAL STEEL

## **DIVISION 06 - WOOD & PLASTICS**

### **06100 ROUGH CARPENTRY**

06115 SHEATHING

### **06200 FINISH CARPENTRY**

06201 GENERAL FINISH CARPENTRY  
06205 MISCELLANEOUS TRIM & MOLDING  
06210 DOOR & FRAME INSTALLATION

### **06400 ARCHITECTURAL WOODWORK**

06401 GENERAL ARCHITECTURAL WOODWORK REQUIREMENTS  
06410 CUSTOM CASEWORK  
06450 STANDING & RUNNING TRIM

## **DIVISION 07 - THERMAL & MOISTURE PROTECTION**

### **07200 THERMAL PROTECTION**

07211 UNFACED BATT INSULATION  
07212 FACED BATT INSULATION

### **07900 JOINT SEALERS**

07920 JOINT SEALANTS

## **DIVISION 08 - DOORS & WINDOWS**

### **08100 METAL DOORS & FRAMES**

08110 HOLLOW METAL

### **08200 WOOD & PLASTIC DOORS**

08210 WOOD DOORS

### **08700 HARDWARE**

8710 DOOR HARDWARE

**08800 GLAZING**

08810 GLASS

**DIVISION 09 - FINISHES**

**09100 METAL SUPPORT ASSEMBLIES**

09110 NON-LOAD BEARING METAL FRAMING SYSTEMS  
09130 ACOUSTICAL SUSPENSION

**09200 PLASTER & GYPSUM BOARD**

09260 GYPSUM WALLBOARD  
09275 GYPSUM BOARD TEXTURED FINISH

**09500 CEILINGS**

09511 ACOUSTICAL PANEL CEILINGS

**09600 FLOORING**

09660 RESILIENT TILE FLOORING  
09681 FLOOR PREPARATION FOR CARPET INSTALLATION  
09690 CARPET TILE

**09900 PAINTS & COATINGS**

09901 GENERAL PAINTING & COATING REQUIREMENTS  
09922 INTERIOR PAINTED GYPSUM WALLBOARD  
09936 INTERIOR CLEAR FINISHED HARDWOOD

**DIVISION 10 - SPECIALTIES**

**10150 COMPARTMENTS AND CUBICLES**

10160 METAL TOILET COMPARTMENTS

**10800 TOILET AND BATH ACCESSORIES**

10810 TOILET ACCESSORIES

**DIVISION 11 - EQUIPMENT**

**11200 LAB EQUIPMENT**

11 200 PANEL-LINED FLOOR-MOUNTED FUME HOOD

**DIVISION 12 - FURNISHINGS**

**12300 MANUFACTURED CASEWORK**

12305 MANUFACTURED CASEWORK

## **DIVISION 13 - SPECIAL CONSTRUCTION**

**NOT USED**

## **DIVISION 14 CONVEYING SYSTEMS**

**NOT USED**

## **DIVISION 15 - MECHANICAL**

### **15050 BASIC MECHANICAL MATERIALS & METHODS**

15025	UCT TESTING AND BALANCING
15051	GENERAL MECHANICAL REQUIREMENTS
15075	MECHANICAL IDENTIFICATION
15081	DUCT INSULATION
15083	POTABLE WATER PIPING INSULATION

### **15100 BUILDING SERVICES PIPING**

15101	GENERAL PIPING REQUIREMENTS
15141	POTABLE WATER PIPING
15150	SANITARY WASTE AND VENT PIPING
15181	CONDENSATE DRAIN PIPING
15196	ATURAL GAS PIPING

### **15400 PLUMBING FIXTURES AND EQUIPMENT**

15410	PLUMBING FIXTURES
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### **15700 HVAC EQUIPMENT**

15731	PACKAGED AIR CONDITIONERS
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### **15800 AIR DISTRIBUTION**

15812	LOW-PRESSURE STEEL DUCTS
15815	NON-METAL DUCTS
15820	DUCT ACCESSORIES
15826	FIRE AND SMOKE DAMPERS
15836	EXHAUST FANS
15851	DIFFUSERS, REGISTERS AND GRILLES
15853	ROOF-MOUNTED AIR INLETS AND OUTLETS
15854	LOUVERS AND VENTS
15861	AIR FILTERS

### **15900 HVAC INSTRUMENTATION AND CONTROLS**

15915	ELECTRIC AND ELECTRONIC CONTROL
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## **DIVISION 16 - ELECTRICAL**

(REFERENCED AS DIVISION 26 - ELECTRICAL FROM NEW FORMAT)

26 0500	GENERAL ELECTRICAL REQUIREMENTS
26 0501	MINOR ELECTRICAL DEMOLITION
26 0519	POWER CONDUCTORS AND CABLES
26 0526	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 0529	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 0534	CONDUIT
26 0535	SURFACE RACEWAYS
26 0537	BOXES
26 0553	IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 2416	PANEL BOARDS
26 2717	EQUIPMENT WIRING
26 2726	WIRING DEVICES
26 2818	ENCLOSED SWITCHES
26 4313	TRANSIENT-VOLTAGE SUPPRESSION
26 5100	INTERIOR LIGHTING

## **DIVISION 27 - COMMUNICATIONS**

(DIVISION 27 - NEW SPECIFICATION FORMAT)

27 1005	STRUCTURED CABLING FOR VOICE AND DATA INSIDE-PLANT
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## **DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

(DIVISION 28 - NEW SPECIFICATION FORMAT)

28 3100	FIRE DETECTION AND ALARM
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## SECTION 01200

### PRICE & PAYMENT PROCEDURES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Administrative and procedural requirements governing Contractor's Applications for Payment.
- B. Related Sections
  - 1. Section 01300, Administrative Requirements - Requirements for Contractor's Construction Schedule & Submittal Schedule.
  - 2. Section 01600, Product Requirements - Administrative procedures for handling requests for substitutions.

##### 1.2 PAYMENT PROCEDURES

- A. Payment Requests
  - 1. Each Payment Request shall be consistent with previous requests and payments certified by Architect and paid for by Owner. Initial Payment Request, Payment Request at time of Substantial Completion, and final Payment Request involve additional requirements specified below.
  - 2. Payment Request Forms - Use standard AIA Payment Request forms.
  - 3. Request Preparation
    - a. Complete every entry on Payment Request form. Incomplete applications will be returned without action.
    - b. Entries shall match data on Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
    - c. Include amounts for Modifications issued before last day of construction period covered by request.
  - 4. Transmittal - Submit a single executed original Payment Request form to Architect. Include waivers of lien and similar attachments when required. Transmit each Payment Request form with transmittal form listing attachments and recording appropriate information related to request as directed by Architect.
  - 5. Initial Payment Request - Administrative actions and submittals that shall precede or coincide with submittal of first Payment Request include
    - a. List of Subcontractors.
    - b. Copies of building permits.
    - c. Copies of authorizations and licenses from governing authorities for performance of the Work.
    - d. Initial progress report.
    - e. Minutes of preconstruction meeting.
    - f. Schedule of Values.
    - g. Contractor's Construction Schedule, preliminary if not final.
    - h. Submittal Schedule, preliminary if not final.
  - 6. Payment Request At Substantial Completion - Following issuance of Certificate of Substantial Completion, submit Payment Request. Administrative actions and submittals that shall precede or coincide with this request include
    - a. Operations & Maintenance Manuals
    - b. Change-over information related to Owner's occupancy, use, operation and maintenance.
    - c. Final cleaning.
    - d. Application for reduction of retainage, and consent of surety.
    - e. Occupancy permits and similar approvals.
    - f. Meter readings.
  - 7. Final Payment Request - Administrative actions and submittals that shall precede or

coincide with submittal of this request include

- a. Completion of Project closeout requirements.
- b. Completion of items specified for completion after Substantial Completion.
- c. Assurance that unsettled claims will be settled.
- d. Assurance that work not completed and accepted will be completed without undue delay.
- e. Transmittal of required Project construction records to Owner.
- f. Proof that taxes, fees and similar obligations have been paid.
- g. Removal of temporary facilities and services.
- h. Removal of surplus materials, rubbish, and similar elements.
- i. Change of door locks to allow Owner's access.

**PART 2 PRODUCTS** - Not Used

**PART 3 EXECUTION** - Not Used

END OF SECTION

## SECTION 01300

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Administrative and supervisory requirements necessary for Project coordination.
  - 2. Administrative and procedural requirements for Project meetings.
  - 3. Administrative and procedural requirements for submittals required for performance of the Work.
  
- B. Related Sections
  - 1. Refer to other Division 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to -
    - a. Permits.
    - b. Applications for payment.
    - c. Performance and payment bonds.
    - d. Insurance certificates.
    - e. List of Subcontractors.

##### 1.2 PROJECT MANAGEMENT & COORDINATION

- A. General
  - 1. This Project designation shall be included on documents generated for Project by Contractor and Subcontractors, or be present on a cover letter accompanying such documents. This designation is required to facilitate tracking of materials, equipment, systems, and products used on Church's Projects by Church and by manufacturers specified in Contract Documents.
  
- B. Project Coordination
  - 1. Coordinate construction activities included in Contract Documents to assure efficient and orderly installation of each part of the Work. Coordinate construction operations that are dependent upon each other for proper installation, connection, and operation.
    - a. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in sequence required to obtain best results.
    - b. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
    - c. Make adequate provisions to accommodate items scheduled for later installation.
  - 2. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings. Prepare similar memoranda for Owner and separate Contractors where coordination of their Work is required.
  - 3. Administrative Procedures - Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to -
    - a. Preparing of schedules.
    - b. Installing and removing temporary facilities.
    - c. Delivering and processing submittals.
    - d. Progress meetings.
    - e. Project Close-out activities.
  - 4. Conservation - Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

C. Project Meetings

1. Preconstruction Conference -

- a. Architect will schedule preconstruction conference and organizational meeting at Project site or other convenient location by 15 days after issuance of Notice To Proceed and before commencement of construction activities. Architect will conduct meeting to review responsibilities and personnel assignments.
- b. Attenders - Owner, Architect, and their consultants, Contractor and his superintendent, major Subcontractors and other concerned parties shall each be represented at conference by persons familiar with and authorized to conclude matters relating to the Work.
- c. Agenda - Discuss items of significance that could affect progress including such topics as
  - 1) Tentative construction schedule.
  - 2) Critical Work sequencing.
  - 3) Designation of responsible personnel.
  - 4) Procedures for processing interpretations and Modifications.
  - 5) Procedures for processing Payment Requests.
  - 6) Distribution of Contract Documents.
  - 7) Submittal of Product Data, Shop Drawings, Samples, Quality Assurance/Control submittals.
  - 8) Preparation of record documents and O & M manual.
  - 9) Use of the premises.
  - 10) Office, work, and storage areas.
  - 11) Equipment deliveries and priorities.
  - 12) Safety procedures.
  - 13) First aid.
  - 14) Security.
  - 15) Housekeeping.
  - 16) Working hours.
  - 17) Resolving current problems.
  - 18) Further orientation as to requirements of Contract Documents.
  - 19) Architect's responsibility to Owner for inspection.
  - 20) Working out general schedule of Architect's inspection.
- d. Architect will record significant discussions and agreements and disagreements of each meeting and distribute minutes of meeting to everyone concerned, including Owner, within three working days.

2. Progress Meetings -

- a. Architect will conduct progress meetings at Project site at regularly scheduled intervals, at least once a month.
- b. Owner, Architect, Contractor, and each Subcontractor concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings by persons familiar with Project and authorized to conclude matters relating to progress.
- c. Agenda -
  - 1) Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
  - 2) Progress since last meeting will be reviewed. Where each activity is in relation to Contractor's Construction Schedule, whether on time or ahead or behind schedule, will be determined. How construction behind schedule is to be expedited will be decided and commitments secured from parties involved to do so. Schedule revisions required to ensure that current and subsequent activities will be completed within Contract Time will be discussed.
  - 3) Present and future needs of each entity present will be discussed, including such items as -
    - a) Interface requirements.
    - b) Time.
    - c) Sequences.
    - d) Deliveries.
    - e) Off-site fabrication problems.

- f) Access.
  - g) Site use.
  - h) Temporary facilities and services.
  - i) Hours of work.
  - j) Hazards and risks.
  - k) Housekeeping.
  - l) Quality and Work standards.
  - m) Modifications.
  - n) Documentation of information for Payment Requests.
- d. Architect will include brief summary, in narrative form, of progress since previous meeting. By three days after each progress meeting date, Architect will distribute copies of minutes of meeting to each party present and to parties who should have been present, including Owner.
  - c. Revise Contractor's Construction Schedule after each progress meeting where revisions to schedule have been made or recognized. Issue revised schedule by three days after each progress meeting date, to each party present and to parties who should have been present, including Owner.
3. Pre-installation Meetings -a. Architect will develop a schedule for pre-installation meetings based on Contractor's Construction Schedule. Architect will schedule these meetings at same time Architect's regularly scheduled inspection visits, if possible. Pre-installation meetings will be held at site before commencement of work specified in trade Sections requiring such a meeting.
- b. Attenders - Architect, Contractor, applicable Subcontractors, item or system suppliers/installers, Manufacturer's representatives, and others as specified or invited. Architect will conduct meeting.
    - 1) Review progress of other construction activities and preparations for particular activity under consideration at each pre-installation meeting, including requirements for -
      - a) Reviewing and confirming requirements of Contract Documents including related Modifications.
      - b) Verifying that completed work is ready for installation of items or systems.
      - c) Resolving conditions not in compliance with installation requirements.
      - d) Establishing installation and inspection schedule.
      - e) Coordination between trades.
      - f) Other trades which affect work of trade Section.
      - g) Other items specified in individual Sections.
      - h) Deliveries.
      - i) Shop Drawings, Product Data, Samples, and Quality Assurance/Control submittals.
      - j) Possible conflicts.
      - k) Compatibility problems.
      - l) Weather limitations.
      - m) Manufacturer's recommendations.
      - n) Compatibility of materials.
      - o) Temporary facilities.
      - p) Space and access limitations.
      - q) Governing regulations.
      - r) Safety.
      - s) Testing requirements.
      - t) Required performance results.
      - u) Recording requirements.
      - u) Protection.
    - 2) Architect will record significant discussions and agreements and disagreements of each meeting, and distribute minutes of meeting within three working days to everyone concerned, including Owner.
    - 3) Make adjustments to work schedule necessitated by decisions of meeting. Do not proceed with work of Section involved if conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene conference within

one week.

### 1.3 CONSTRUCTION PROGRESS DOCUMENTATION

#### A. Contractor's Construction Schedule

1. Prepare fully developed, horizontal bar chart type Contractor's Construction Schedule. Submit within 30 days of date established for 'Commencement of the Work.'
  - a. Provide separate time bar for each significant construction activity. Provide continuous vertical line to identify first working day of each week. Use same breakdown of units of the Work as shown in Schedule of Values.
  - b. Within each time bar show estimated completion percentage in 10 percent increments. As Work progresses, place contrasting mark in each bar to indicate actual completion.
  - c. Prepare schedule on sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for entire construction period.
  - d. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on schedule with other construction activities, including minor elements involved in sequence of the Work. Show each activity in proper sequence. Show graphically sequences necessary for completion of related portions of the Work.
  - e. Coordinate Contractor's Construction Schedule with Schedule of Values, list of subcontracts, submittal schedule, progress reports, payment requests, and other schedules.
  - f. Show completion before date established for Substantial Completion. Show Substantial Completion on schedule to allow time for Architect's procedures necessary for certification of Substantial Completion.
2. Show important stages of construction for each major portion of the Work, including testing and installation.
3. Provide separate time bar to identify each major construction area for each major portion of the Work. Show where each element in an area must be sequenced or integrated with other activities.
4. At head of schedule, provide two item cost correlation lines, indicating 'precalculated' and 'actual' costs. On line, show dollar-volume of work completed as of dates used for preparation of payment requests. Refer to Section 01200 for cost reporting and payment procedures.
5. Following response to initial submittal, print and distribute copies to Architect, Owner, Subcontractors, and other parties required to comply with scheduled dates. Post copies in Project meeting room and temporary field office. When revisions are made, distribute to same parties and post in same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
6. Revise schedule after each meeting or activity where revisions have been recognized or made. Issue updated schedule concurrently with report of each meeting.
7. Acceleration Of The Work -
  - a. If circumstances require that the Work or portion thereof be completed at date earlier than Contract completion date as adjusted by Modifications and if directed by Architect or Owner, increase forces, equipment, hours of work, and/or number of shifts and speed up delivery of materials to meet altered completion date or dates ordered or directed. Any increase in cost to Contractor in compliance with such orders or directives will be reflected in an adjustment in Contract Sum in accordance with additional work performed.
  - b. If in judgment of Architect or Owner the Work is behind schedule and rate of placement of work is inadequate to regain scheduled progress and if so informed by Architect or Owner, immediately take action to increase rate of work placement.
    - 1) This shall be accomplished by any one or a combination of the following or other suitable measures -
      - a) An increase in working forces,
      - b) An increase in equipment or tools,
      - c) An increase in hours of work or number of shifts,
      - d) Speeding up delivery of materials.
    - 2) Within 10 days after being so informed, notify Architect of specific

measures taken and/or planned to increase rate of progress with an estimate of when scheduled progress will be regained. If plan of action is deemed inadequate by Architect or Owner, take additional steps or make adjustments to plan of action until it meets with Architect's or Owner's approval.

- 3) Acceleration of work will continue until scheduled progress is regained. Establish scheduled progress from latest revised approved progress schedule for Project. Timely completion is understood to be contract completion date as revised by time extensions granted at time acceleration is undertaken.
  - 4) No additional compensation for additional effort applied to the Work under terms of this subparagraph will be granted.
- c. Any directive or order to accelerate the Work will be in writing. Any directive or order terminating accelerated work will be in writing.

#### B. Daily Construction Reports

1. Prepare daily reports of operations at Project containing at least following information -
  - a. List of Subcontractors at site.
  - b. Approximate count of personnel at site by trade.
  - c. High and low temperatures, general weather conditions.
  - d. Major items of equipment on site.
  - e. Materials, equipment, or Owner-furnished items arriving or leaving site.
  - f. Accidents and unusual events.
  - g. Site or structure damage by water, frost, wind, or other causes.
  - h. Meetings and significant decisions.
  - i. Visitors to the job including meeting attenders.
  - j. Stoppages, delays, shortages, losses.
  - k. Any tests made and their result if known.
  - l. Meter readings and similar recordings.
  - m. Emergency procedures.
  - n. Orders and requests of governing authorities.
  - o. Modifications received, carried out.
  - p. Services connected, disconnected.
  - q. Equipment or system tests and start-ups.
  - r. Brief summary of work accomplished that day.
2. Forward daily reports to Architect on at least a weekly basis. Preface each packet of daily reports with a Project Status Report summarizing the attached daily reports.
3. Maintain file of copies of daily reports on site and make available to Architect and Owner upon request.

### 1.4 SUBMITTAL PROCEDURES

#### A. General

1. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently before performance of related construction activities to avoid delay.
  - a. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - b. Coordinate transmittal of different types of submittals required for related elements of the Work so processing will not be delayed by need to review submittals concurrently for coordination. Architect reserves right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
  - c. Allow sufficient review time so installation will not be delayed by time required to process submittals, including time for resubmittals.
    - 1) Allow 21 days for initial review. Allow additional time if processing must be delayed to allow coordination with subsequent submittals. Architect will promptly advise Contractor when submittal being processed must be delayed for coordination.
    - 2) If an intermediate submittal is necessary, process same as initial submittal.
    - 3) Allow 10 days for reprocessing each submittal.

- 4) No extension of Contract Time will be authorized because of failure to transmit submittals to Architect sufficiently before work is to be performed to allow processing.
2. Place a permanent label or title block on each submittal for identification. Include name of entity that prepared each submittal on label or title block.
  - a. Provide space approximately 4 by 5 inches on label or beside title block on Shop Drawings to record Contractor's review and approval markings and action taken.
  - b. Include following information on label for processing and recording action taken.
    - 1) Project name.
    - 2) Date.
    - 3) Name and address of Architect.
    - 4) Name and address of Contractor.
    - 5) Name and address of Subcontractor.
    - 6) Name and address of supplier.
    - 7) Name of manufacturer.
    - 8) Number and title of appropriate Specification Section.
    - 9) Drawing number and detail references, as appropriate.
3. Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using transmittal letter. On transmittal, record relevant information and requests for data. Include Contractor's certification that information complies with Contract Document requirements, or, on form or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations.
4. Submittals received from sources other than Contractor or not marked with Contractor's approval will be returned without action.

**B. Submittal Schedule**

1. Within 20 days after receipt of Notice to Proceed, furnish submittal schedule listing items specified to be furnished for review to Architect including product data, shop drawings, samples, and quality assurance/control submittals.
  - a. Coordinate submittal schedule with list of Subcontractors, schedule of values, and Contractor's construction schedule.
  - b. Prepare schedule in chronological order, including submittals required during first 90 days of construction. Provide following information -
    - 1) Scheduled date for first submittal.
    - 2) Related Section number.
    - 3) Submittal category.
    - 4) Name of Subcontractor.
    - 5) Description of part of the Work covered.
    - 6) Scheduled date for resubmittal
    - 7) Scheduled date for Architect's final release or approval.
  - c. Schedule shall show 20 days minimum after receipt for review by Architect. If resubmittal is required, an additional 15 days will be allowed for after receipt.
2. Following response to initial submittal, print and distribute copies to Architect, Owner, Subcontractors, and other parties required to comply with submittal dates shown. Post copies in Project meeting room and field office. When revisions are made, distribute to same parties and post in same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
3. Revise schedule after each meeting or activity, where revisions have been recognized or made. Issue updated schedule concurrently with minutes of each meeting.
4. Furnishing of submittal schedule or revision thereto shall not be interpreted as relieving Contractor of his obligation to comply with Contract Document requirements for items on schedule.

**C. Product Data**

1. Collect Product Data, as required by individual Sections, into separate submittals. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as Shop Drawings.
2. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required for Project, mark copies to show applicable information.

3. Do not submit Product Data until compliance with requirements of Contract Documents has been confirmed.
4. Submit preliminary single-copy of Product Data where selection of options by Architect is required.
5. Submit five copies minimum of each required submittal. Architect will retain two and return others marked with action taken and with corrections or modifications required. Unless noncompliance with Contract Document provisions is observed, submittal may serve as final submittal. Insert one marked copy in Owner-provided three-ring binders used to become Operations & Maintenance Manuals specified in Section 01700.
6. Furnish copies of final submittal to Subcontractors and others as required for performance of construction activities. Show distribution on transmittal forms.
  1. Do not proceed with installation until applicable copy of Product Data is in installer's possession.
  2. Do not allow use of unmarked copies of Product Data in connection with construction.

- D. Shop Drawings
1. Submit newly prepared graphic data to accurate scale. Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches. Highlight, encircle, or otherwise show deviations from Contract Documents. Include following information as a minimum.
    - a. Dimensions.
    - b. Identification of products and materials included.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
  2. Do not reproduce Contract Documents or copy standard information as basis of Shop Drawings. Standard information prepared without specific reference to Project is not considered Shop Drawings.
  3. Review and designate (stamp) approval of shop drawings. Submit to Architect, with reasonable promptness and in orderly sequence, shop drawings required by Contract Documents. Shop drawings not required by Contract Documents, but requested by Contractor or supplied by Subcontractor need not be submitted to Architect for review. However, these shop drawings shall meet specified shop drawing requirements except those relating to submission to Architect.
    - a. Bear cost of reproducing copies of shop drawings required by all concerned. Instead of prints, a sepia may be required.
    - b. Shop drawings shall be complete and detailed.
    - c. Shop drawings shall be properly identified as specified or as Architect may require.
    - d. Provide 6 copies of shop drawings unless required otherwise in specification Section.

- E. Samples
1. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
    - a. Mount, display, or package Samples so as to ease review of qualities indicated. Prepare Samples to match samples provided by Architect, if applicable. Include following -
      - 1) Generic description of Sample.
      - 2) Sample source.
      - 3) Product name or name of manufacturer.
      - 4) Compliance with recognized standards.
      - 5) Availability and delivery time.
    - b. Submit Samples for review of kind, color, pattern, and texture, for final check of these characteristics with other elements, and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
      - 1) Where variations in color, pattern, texture or other characteristics are inherent in material or product represented, submit multiple units (not less



END OF SECTION

## SECTION 01600

### PRODUCT REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Administrative and procedural requirements governing Contractor's selection of products for use in Project.
- B. Related Sections
  - 1. Section 01300, Submittals - Contractor's Construction Schedule and Schedule of Submittals
- C. Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on building exterior.
  - 1. Locate required product labels and stamps on concealed surface or, where required for observation after installation, on accessible surface that is not conspicuous.
  - 2. Provide permanent nameplates on items of service-connected or power-operated equipment. Locate on easily accessible surface that is inconspicuous in occupied spaces. Nameplate shall contain following information and other essential operating data -
    - a. Name of product and manufacturer.
    - b. Model and serial number.
    - c. Capacity.
    - d. Speed.
    - e. Ratings.

##### 1.2 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
  - 1. Schedule delivery to reduce long-term storage at site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to site in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products upon delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.
  - 5. Store products at site in manner that will simplify inspection and measurement of quantity or counting of units.
  - 6. Store heavy materials away from Project structure so supporting construction will not be endangered.
  - 7. Store products subject to damage by elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

#### PART 2 PRODUCTS

##### 2.1 PRODUCT OPTIONS

- A. When option of selecting between two or more products is given, product selected shall be compatible with products previously selected, even if previously selected products were also

- options.
- B. Provide products that comply with Contract Documents, that are undamaged, and unless otherwise indicated, new and unused at time of installation. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and for intended use and effect.
  - C. Product selection is governed by Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include
    1. Substitutions -
      - a. Where the heading 'Approved Manufacturers' is used to identify the list of specified products or manufacturers and statement 'Equal as approved by Architect before bidding. See Section 01600' is not included, provide only one of products specified. No substitutions or mixing of manufacturers' products will be allowed.
      - b. Where the heading 'Acceptable Manufacturers' is used to identify the list of specified products or manufacturers and the statement 'Equal as approved by Architect before bidding. See Section 01600' is included, use the specified products and manufacturers unless approval to use other products and manufacturers has been obtained by Addendum after following the requirements in the Instructions To Bidders relative to substitutions.
    2. Where specifications describe a product or assembly by specifying exact characteristics required, with or without use of brand or trade name, provide product or assembly that provides specified characteristics and otherwise complies with Contract requirements.
    3. Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by manufacturer for application described. General overall performance of product is implied where product is specified for specific application. Manufacturer's recommendations may be contained in published product literature, or by manufacturer's certification of performance.
    4. Where specifications only require compliance with an imposed code, standard, or regulation, select product that complies with standards, codes or regulations specified.
    5. Where Specifications require matching an established Sample, Architect's decision will be final on whether proposed product matches satisfactorily. Where no product available within specified category matches satisfactorily nor complies with other specified requirements, refer to Architect.
    6. Where specified product requirements include phrase '. . . as selected from manufacturer's standard colors, patterns, textures . . .' or similar phrase, select product and manufacturer that comply with other specified requirements. Architect will select color, pattern, and texture from product line selected.
    7. Remove and replace products and materials not specified in Contract Documents but installed in the Work with specified products and materials at no additional cost to Owner and for no increase in Contract time.

## **2.2 OWNER FURNISHED PRODUCTS**

- A. Install items furnished by Owner or receive and store in safe condition items purchased direct by Owner according to requirements of Contract Documents.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION OF PRODUCTS**

- A. Anchor each product securely in place, accurately located, and aligned with other Work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until time of Substantial Completion.

END OF SECTION

## SECTION 01700

### EXECUTION REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Administrative and procedural requirements for installation, demolition, and cleaning.
  - 2. Administrative and procedural requirements for project closeout, including
    - a. Project record document submittal.
    - b. Operations & maintenance manual submittal.
    - c. Submittal of warranties.
- B. Related Sections
  - 1. Closeout requirements for specific construction activities are included in appropriate Sections in Divisions 02 through 16.

#### PART 2 PRODUCTS - Not Used

#### PART 3 EXECUTION

##### 3.1 PREPARATION

- A. Bracing, Shoring, & Sheathing - Design, furnish, and install all shoring, bracing, and sheathing as required for safety and for proper execution of the Work and have same removed if required when the Work is completed.

##### 3.2 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions - Require installer of each major component to inspect both substrate and conditions under which Work is to be done. Notify Architect in writing of unsatisfactory conditions. Do not proceed until unsatisfactory conditions have been corrected.
- B. Manufacturer's Instructions - Comply with Manufacturer's installation instructions and recommendations, to extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again before installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure work true to line and level. Allow for expansion and building movement.
- E. Visual Effects - Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain best visual effect. Refer questionable choices to Architect for final decision.
- F. Recheck measurements and dimensions before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure best possible results. Isolate each part of completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to reduce necessity of uncovering completed construction for that purpose.

- I. Mounting Heights - Where mounting heights are not shown, install individual components at standard mounting heights recognized within the industry or local codes for that application. Refer questionable mounting height decisions to Architect for final decision.

### **3.3 GENERAL DEMOLITION REQUIREMENTS**

- A. Before beginning work on Project, inspect areas in which work will be performed.
  1. Photograph or video tape existing conditions, including surrounding property if necessary, which could be misconstrued as damage resulting from selective demolition.
  2. File copies of photographs/video tapes with Architect before beginning work of this Section.
- B. Scheduling
  1. Include on Construction Schedule specified in Section 01300 detailed sequence of individual demolition operations.
  2. Coordinate with Owner for equipment and materials to be removed by Owner.
- C. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structures to be demolished and adjacent facilities to remain. Cease demolition operations and notify Architect immediately if safety of structure appears to be endangered. Do not resume demolition operations until safety is restored.
- D. Cover and protect furniture, equipment, and fixtures from soiling and damage when demolition work is performed in rooms and areas from which such items have not been removed.
- E. Execute work in an orderly and careful manner, with due consideration for neighbors and the public.
- F. Carefully remove, disassemble, or dismantle as required, and store in approved location on site, existing items to be reused in completed work.
- G. Remove all parts of building to be demolished including foundations and footings unless shown otherwise. Demolish masonry in small sections. Use bracing and shoring where necessary to avoid collapse of structure. Erect dust chutes and use for removal of materials, rubbish, and debris as necessary.

### **3.4 CLEANING**

- A. Progress Cleaning
  1. Comply with regulations of authorities having jurisdiction and safety standards for cleaning.
  2. Keep premises broom clean during progress of the Work.
  3. During performance of demolition, keep building, site, and adjoining streets reasonably clean, and sweep areas affected by demolition operations daily. If necessary, sprinkle rubbish and debris to lay dust.
  4. During handling and installation, protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from soiling, damage, or deterioration until Substantial Completion.
  5. Clean and maintain completed construction as frequently as necessary throughout construction period. Adjust and lubricate operable components to ensure ability to operate without damaging effects.
  6. Supervise construction activities to ensure that no part of construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.
  7. Before and during application of painting materials, clear area where such work is in progress of debris, rubbish, and building materials that may cause dust. Sweep floors and vacuum as required and take all possible steps to keep area dust free.
  8. Collection & Disposal of Waste -
    - a. Remove waste materials and rubbish caused by employees, Subcontractors, and contractors under separate contract with Owner and dispose of legally. Remove unsuitable or damaged materials and debris from building and from property.
      - 1) Provide adequate waste receptacles and dispose of materials when full.

- 2) Properly store volatile waste and remove daily.
  - 3) Do not deposit waste into storm drains, sanitary sewers, streams, or waterways. Do not discharge volatile, harmful, or dangerous materials into drainage systems.
  - b. Do not burn waste materials. Do not bury debris or excess materials on Owner's property.
9. Where extra materials of value remaining after completion of associated Work have become Owner's property, arrange for disposition of these materials as directed.

**B. Final Cleaning**

1. Clean each surface or unit to condition expected in normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions. Remove all rubbish from under and about building and leave building clean and habitable.
2. In addition to general cleaning noted above, perform cleaning for all trades at completion of work in areas where construction activities have occurred, including -
  - a. Interior -
    - 1) Wash and polish inside glazing, exercising care not to scratch glass. Replace chipped or broken glass and other damaged glazing materials.
    - 2) Remove marks, stains, fingerprints and other soil, and dirt from painted, decorated, and stained work.
    - 3) Clean and polish woodwork.
    - 4) Remove labels that are not permanent labels.
    - 5) Clean and polish hardware for all trades. This shall include removal of stains, dust, dirt, paint, etc.
    - 6) Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean light fixtures and lamps.
    - 7) Clean other fixtures and equipment and remove stains, paint, dirt, and dust.
    - 8) Remove temporary floor protection and clean floors.
    - 9) Clean metal surfaces, including doors and windows, required to have polished finishes. Polish surfaces, leaving them without fingerprints or other blemishes.
3. If Contractor fails to clean up, Owner may do so and charge cost to Contractor.

**3.5 CLOSEOUT PROCEDURES**

**A. Pre-Substantial Completion Inspections**

1. Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in request.
  - a. Notify Architect in writing when items have been corrected and receive Architect's verification of correction of items.
  - b. In Payment Request that coincides with or first follows date Substantial Completion is claimed, show 100 percent completion for the Work. Include supporting documentation for completion as specified in Contract Documents and statement showing accounting of changes to Contract Sum.
  - c. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, equipment check-out sheets, and similar documents.
  - d. Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - e. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
  - f. Deliver tools, spare parts, extra stock, and similar items.
  - g. Make final change-over of permanent locks and transmit keys to Owner. Advise Owner's personnel of change-over in security provisions.
  - h. Complete start-up testing of systems, and instruction of Owner's maintenance personnel. Discontinue or change over and remove temporary facilities from site, along with construction tools, mock-ups, and similar elements.
  - i. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

2. Upon completion of Project, request a Pre-Substantial Completion Inspection in writing. Completion of Project shall be stated in Contractor's Construction Schedule specified in Section 01300 and shall leave sufficient time between completion of Project and expiration of Contract time to allow correction of work.
  3. On receipt of request for inspection, Owner and Architect and his consultants will schedule and conduct a Pre-Substantial Completion Inspection in presence of Contractor's designated representative, or will advise Contractor of known requirements to be completed before scheduling of Pre-Substantial Completion Inspection. List of items to be corrected by Contractor will be furnished to Contractor within two days after Pre-Substantial Completion Inspection.
  4. Architect will repeat inspection when requested and assured that the Work has been substantially completed.
  5. Results of the completed Pre-Substantial Completion Inspection will form the basis of requirements for final acceptance.
- B. Substantial Completion Inspection
1. Upon receipt of notice that the Work is complete except items whose completion has been delayed because of circumstances acceptable to Architect, Architect will arrange substantial completion inspection to include Owner's representatives. Architect will also notify Contractor and Owner in writing of time and place of inspection. Upon completion of inspection, unless building is rejected, Architect will prepare a certificate of final acceptance. Owner, Architect, and Contractor will execute a Certificate of Substantial Completion that states dates for -
    - a. User occupancy
    - b. Commencement of warranties
    - c. Final acceptance meeting
    - d. Modifications to amount assessed for liquidated damages
  2. After inspection and if necessary, Architect will furnish final list of items to be corrected.
- C. Final Acceptance Meeting
1. Before requesting final inspection for certification of final acceptance and final payment, complete following. List exceptions in request.
    - a. Submit final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
    - b. Submit updated final statement, accounting for final additional changes to Contract Sum.
    - c. Submit certified copy of Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and list has been endorsed and dated by Architect.
    - d. Submit final meter readings for utilities, measured record of stored fuel, and similar data as of date of Substantial Completion, or when Owner took possession of and responsibility for corresponding elements of the Work.
    - e. Submit consent of surety to final payment.
    - f. Submit final liquidated damages settlement statement.
  2. Final acceptance meeting will ensure that deficiencies noted at substantial completion inspection have been corrected according to terms of Substantial Completion Certificate.
  3. When all items have been corrected, Architect will issue a letter to Owner authorizing final payment.
  4. If all items have not been corrected as agreed, Owner may elect to complete the Work under provisions of the General Conditions.

### 3.6 CLOSEOUT SUBMITTALS

- A. General
1. Refer to other specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately before date of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to Architect for Owner's records.
  2. Final payment for Project will not be made until closeout submittals have been

completed, submitted, and approved.

- B. Operations & Maintenance Manuals
  - 1. Owner will deliver to Contractor set of binders prepared to receive Operations & Maintenance Data and Product Data to be submitted during course of construction.
  - 2. Include following information in Meetinghouse Operations & Maintenance Manuals -
    - a. Copy of complete Project Manual including addenda and copies of other written construction documents such as Change Orders and interpretations issued during construction.
      - 1) Mark these documents to show variations in actual Work performed in comparison with text of specifications and Modifications. Show substitutions, selection of options, and similar information, particularly on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
      - 2) Note related record drawing information and Product Data.
    - c. Product Data - One copy of each Product Data submittal as specified in Section 01300.
    - d. Operations & maintenance manuals required by Divisions and Sections of the specifications.
    - e. Certifications.
    - f. Copies of specified warranties.
- C. Preventative Maintenance Instructions
  - 1. Arrange for each installer of equipment that requires regular maintenance to meet with Owner's personnel to provide instruction in proper operation and maintenance as specified in specification Sections. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include detailed reviews of following items
    - a. Maintenance manuals.
    - b. Record documents.
    - c. Spare parts and materials.
    - d. Tools.
    - e. Lubricants.
    - f. Fuels.
    - g. Identification systems.
    - h. Control sequences.
    - i. Hazards.
    - j. Cleaning.
    - k. Warranties and bonds.
    - l. Maintenance agreements and similar continuing commitments.
  - 2. As part of instruction for operating equipment, demonstrate following procedures
    - a. Start-up.
    - b. Shutdown.
    - c. Emergency operations.
    - d. Noise and vibration adjustments.
    - e. Safety procedures.
    - f. Economy and efficiency adjustments.
    - g. Effective energy use.
- D. Project Record Documents
  - 1. Do not use record documents for construction purposes. Protect from deterioration and loss in secure, fire-resistive location. Provide access to record documents for Architect's reference during normal working hours.
  - 2. Maintain clean, undamaged set of blue or black line white-prints of Contract Drawings. Mark set to show actual installation where installation varies from the Work as originally shown. Give particular attention to concealed elements that would be difficult to measure and record at later date.
    - a. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
    - b. Mark new information that is important to Owner, but was not shown on Contract Drawings.

- c. Note related Change Order numbers where applicable.
- d. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on cover of each set.

E. Warranties

1. When written guarantees beyond one year after substantial completion are required of any Section of the Work, Contractor shall secure such guarantees and/or warranties properly addressed and signed and in favor of Owner. Include these documents in Meetinghouse Operations & Maintenance Manuals specified above.
2. Delivery of guarantees and warranties shall not relieve Contractor from any obligation assumed under any other provisions of his contract.
3. Nothing in this Section intends or implies that guarantees and/or warranties shall apply to work abused or neglected by Owner.

END OF SECTION

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## SECTION 02073

### PARTIAL DEMOLITION FOR REMODELING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Demolish and remove portions of existing building as described in Contract Documents.
- B. Related Sections
  - 1. New and replacement work specified in appropriate specification Section.

##### 1.2 SUBMITTALS

- A. Closeout - Identify abandoned utility and service lines and capping locations on record drawings.

##### 1.3 SCHEDULING

- A. Include on Construction Schedule specified in Section 01300 detailed sequence of individual demolition operations.
- B. Coordinate with Owner for equipment and materials to be removed by Owner.

#### PART 2 PRODUCTS - Not Used

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Before beginning work of this Section, inspect areas in which work will be performed.
  - 1. Photograph or video tape existing conditions, including surrounding property if necessary, which could be misconstrued as damage resulting from selective demolition.
  - 2. File copies of photographs/video tapes with Architect before beginning work of this Section.

##### 3.2 PREPARATION

- A. Notify corporations, companies, individuals, and local authorities owning conduits running to property.
  - 1. Protect and maintain conduits, drains, sewers, pipes, and wires that are to remain on the property.
  - 2. Arrange for removal of wires running to and on property. Remove pipes and sewers in accordance with instructions of above owners.
- B. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structures to be demolished and adjacent facilities to remain. Cease demolition operations and notify Architect immediately if safety of structure appears to be endangered. Do not resume demolition operations until safety is restored.
- C. Cover and protect furniture, equipment, and fixtures from soiling and damage when

demolition work is performed in rooms and areas from which such items have not been removed.

- D. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust and fumes to occupied portions of building.
- E. Provide weatherproof closures for exterior openings resulting from demolition work.
- F. All furnishings, accessories, etc. equipment scheduled to be removed during demolition shall remain property of the University unless otherwise indicated by Facilities Management's Project Manager. The Facilities Management Department shall be contacted to determine if they can use the equipment in questions. If Facilities Management doesn't have a use for the equipment, it will be delivered to Property Re-distribution.

### **3.3 PERFORMANCE**

- A. Execute work in an orderly and careful manner, with due consideration for neighbors and the public.
- B. Carefully remove, disassemble, or dismantle as required, and store in approved location on site, existing items to be reused in completed work.
- C. Remove all parts of building to be demolished. Use bracing and shoring where necessary to avoid collapse of structure. Erect dust chutes and use for removal of materials, rubbish, and debris as necessary.

### **3.4 CLEANING**

- A. Keep building and site reasonably clean, and sweep areas affected by demolition operations daily during performance of demolition.
- B. Promptly remove materials, rubbish, and debris from building and from property.

END OF SECTION

## SECTION 05051

### BOLTING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Quality of structural bolts used on Project.
- B. Related Sections
  - 1. Furnishing and installing of bolts specified in Section concerned.

##### 1.2 REFERENCES

- A. American Society For Testing And Materials
  - 1. ASTM A 36-90, "Specification for Structural Steel"
  - 2. ASTM A 307-91, "Specification for Carbon Steel Bolts and Studs 60,000 psi Tensile Strength"

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURED UNITS

- A. Bolts & Threaded Fasteners
  - 1. Anchor Bolts - Non-headed type meeting requirements of ASTM A 307, Grade A, unless otherwise specified.
  - 2. Anchor Rods For Steeple Base Connections - Conform with ASTM A 36.
  - 3. All Other Bolts - Conform with requirements of ASTM A 307, Grade A.

#### PART 3 EXECUTION - Not Used

END OF SECTION

**SECTION 05120**  
**STRUCTURAL STEEL**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Products Supplied But Not Installed Under This Section
  - 1. Angles
- B. Related Sections
  - 1. Division 06 - Installation of structural steel

**1.2 REFERENCES**

- A. American Society For Testing And Materials
  - 1. ASTM A 36-90, "Specification for Structural Steel"
  - 2. ASTM A 53-90a, "Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless"
  - 3. ASTM A 500-90, "Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes"

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Angles & Miscellaneous - Meet requirements of ASTM A 36.

**2.2 FABRICATION**

- A. AISC "Specification for Design, Fabrication, and Erection of Structural Steel for Building" as amended to date shall serve as minimum standard.
- B. Angles - After fabrication and prior to shop priming, hot-dip galvanize lintels and relieving angles to be installed in exterior walls.
- C. Shop prime structural steel.

**PART 3 EXECUTION**

**3.1 ERECTION**

- A. AISC "Specification for Design, Fabrication, and Erection of Structural Steel for Building" as amended to date shall serve as minimum standard. Erection includes setting, aligning, and bracing as necessary.

END OF SECTION

## SECTION 06 115

### SHEATHING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install wood sheathing required for walls as described in Contract Documents.

##### 1.2 SUBMITTALS

- A. See Section 01 300.
- B. Quality Assurance/Control
  - 1. Submit technical and engineering data on nails to be set by nailing guns for Architect's approval of types proposed to be used as equivalents to specified hand set nails.

##### 1.3 QUALITY ASSURANCE

- A. Pre-Installation Meeting
  - 1. See Section 01 200.

##### 1.4 DELIVERY, STORAGE, & HANDLING

- A. Protect sheathing and keep under cover in transit and at job site.
- B. Do not deliver material unduly long before it is required.
- C. Store sheathing on level racks and keep free of ground. Stack to insure proper ventilation and drainage.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. General
  - 1. Meet Requirements of PS 1-83/ANSI A199.1 except where APA Performance Rated units are specified. Every sheet shall bear appropriate APA grade stamp identifying species of plywood or by Certificate of Inspection issued by approved lumber grading or inspection bureau or agency listed above.
  - 2. Plywood shall not exceed 18% moisture content when fabricated nor more than 19% when installed.
  - 3. This specification is written for APA Performance Rated Plywood. Waferboard, Composite board, and Oriented Strand Board (but not Structural Particle-board) are accepted as equals providing specified span ratings are met. In all cases, thickness shown is minimum regardless of span rating. Material used for same purpose shall be of same thickness.
  - 4. Panels shall be stamped 'Sized for Spacing'.
- B. Nails
  - 1. 15/32 inch & thicker panel - 10d common or galvanized box.

#### PART 3 EXECUTION

### 3.1 INSTALLATION

- A. General
  - 1. Top of nail heads shall be flush with sheathing surface.
- B. Wall Sheathing
  - 1. Spacing -
    - a. Provide  $1/8$  inch space between sheets at end and side joints.
    - b. Stagger panel end joints.
  - 2. Edge Bearing & Blocking -
    - a. Panel edges shall bear on framing members and butt along their center lines.
    - b. Back block panel edges which do not bear on framing members with 2 inch nominal framing.
  - 3. Nailing - Place nails not less than  $3/8$  inch in from edge and 12 inches on center along intermediate supports and 4 inches on center along panel edge unless shown otherwise on drawings.
  - 4. Thickness -  $15/32$  inch minimum.

END OF SECTION

## SECTION 06 201

### GENERAL FINISH CARPENTRY

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install sealants required for items installed under this Section, as described in Contract Documents.
  - 2. Furnish and install following items as described in Contract Documents -
    - a. Casework.
    - b. Wood Trim.
- B. Products Installed But Not Supplied Under This Section
  - 1. Finish Hardware
  - 2. Miscellaneous as specified elsewhere
- C. Related Sections
  - 1. Division 07 - Quality of sealants, submittal and installation requirements
  - 2. Division 08 - Furnishing of Finish Hardware

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Glue - Waterproof and of best quality.
- B. Decoration Anchors - Bright zinc plated, wire size 4, 3-7/8 inches total length.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. General Woodwork
  - 1. Work shall be made in accordance with measurements taken on the job.
  - 2. Scribe, miter, and join accurately and neatly to conform to details.
  - 3. Exposed surfaces shall be machine sanded, ready for finishing.
  - 4. Countersink nails. Countersink screws and plug those exposed to view.
- B. Items installed but not supplied under this Section - Install in accordance with requirements specified in Section supplying item.

END OF SECTION

## SECTION 06 205

### MISCELLANEOUS TRIM & MOLDING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install wood trim not specified elsewhere as described in Contract Documents.
  
- B. Related Sections
  - 1. Section 06 201 - General Finish Carpentry
  - 2. Section 06 450 - Standing and running trim.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Softwood - Solid stock Pine, C or better, S4S.
  
- B. Hardwood - Plain sawn Cherry.

END OF SECTION

## SECTION 06 210

### DOOR & FRAME INSTALLATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install sealants for calking door frames as described in Contract Documents.
- B. Products Installed But Not Supplied Under This Section
  - 1. Flush wood doors
  - 2. Hollow metal door frames
- C. Related Sections
  - 1. Section 06 201 - General Finish Carpentry
  - 2. Division 07 - Quality of sealants
  - 3. Division 08 - Furnishing of doors and frames

##### 1.2 SUBMITTALS

- A. See Section 01 300.
- B. Quality Assurance Submittals
  - 1. Submit copy of "Installation Guide for Doors & Hardware" by Door & Hardware Institute for Architect's examination. Guide may be obtained from Door and Hardware Institute (DHI).

##### 1.3 QUALITY ASSURANCE

- A. Regulatory Requirements
  - 1. Fire door installations shall meet code requirements.

##### 1.4 DELIVERY, STORAGE, & HANDLING

- A. Wood Doors
  - 1. Do not have doors delivered to building site until after plaster, cement, and taping compound are dry. If doors are to be stored at job-site for more than one week, seal top and bottom edges.
  - 2. Store flat on a level surface in a dry, well ventilated building. Cover to keep clean but allow air circulation.
  - 3. Handle with clean gloves and do not drag doors across one another or across other surfaces.
  - 4. Do not subject doors to abnormal heat, dryness, or humidity or sudden changes therein. Condition doors to average prevailing humidity of locality before hanging.

#### PART 2 PRODUCTS - Not Used

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Doors
  - 1. General -
    - a. When Project is completed, doors shall not bind, stick, or be mounted so as to

- cause future hardware difficulties.
  - b. Do not impair utility or structural strength of door in fitting of door, applying hardware, or cutting and altering door louvers, panels, or other special details.
  - c. Read Hardware Manufacturer's instructions prior to mounting hardware and follow as closely as possible.
  - d. Mount closers on stop side of door (Parallel Arm) where possible.
2. Wood Doors -
- a. Use hardware templates furnished by Hardware Manufacturer when mounting hardware.
  - b. Set hinges flush with edge surface. Be sure that hinges are set in a straight line to prevent distortion.
  - c. Mount door latches high in strike plate opening so when door later settles, latch will not bind.
- B. Hollow Metal Frames
- 1. Site Tolerances -
    - a. Squareness -  $1/16$  inch from top edge to opposite top edge.
    - b. Plumbness -  $1/16$  inch from top of jamb to bottom of jamb.
    - c. Alignment -  $1/16$  inch from plane of left side face of jamb to right side face of jamb.
    - d. Twist -  $1/16$  inch across throat of jamb plane measured across each face to plane of opposite jamb throat.
    - e. Finished Clearance Between Door & Frame -
      - 1)  $1/16$  inch at head and hinge jamb plus  $1/16$  maximum
      - 2)  $1/8$  inch at strike jamb plus or minus  $1/16$  inch maximum.
      - 3)  $1/2$  inch to top of finished floor surface or  $1/4$  inch to top of threshold, plus or minus  $1/16$  inch maximum.
  - 2. Coat interior of frames to be installed in framed walls with spray urethane foam. Trim excess before installation.
  - 3. Set frame in location and level head.
  - 4. Equalize with adjustable floor anchor.
  - 5. Set spreaders and fasten jambs to floor and wall.
    - a. Wood spreaders shall be square, fabricated from lumber one inch minimum thick, be same length as door opening at header, and same depth as frame depth.
    - b. Cut notches for frame stops.
    - c. Do not remove spreaders until frames are permanently anchored in wall.
    - d. Use one spreader at base of frame and another at strike level.
    - e. Do not use temporary spreaders welded to base of jambs during installation of frame.
  - 6. Install four anchors minimum per jamb. Locate anchors at centerline of hinges and at base of jamb.
  - 7. Fill gap between frame and framing with urethane foam or fiberglass insulation. Calk around both sides of frame with specified sealant.

END OF SECTION

## SECTION 06401

### GENERAL ARCHITECTURAL WOODWORK REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Standards for fabrication of Architectural Woodwork and for hardware associated with Architectural Woodwork.
- B. Products Supplied But Not Installed Under This Section
  - 1. Architectural Woodwork
- C. Related Sections
  - 1. Section 06110 - Furring and blocking
  - 2. Division 09 - Filling of nail holes and finishing

##### 1.2 SUBMITTALS

- A. See Section 01300.
- B. Product Data - Manufacturer's literature for specialty items and hardware not manufactured by Architectural Woodwork firm.
- C. Samples - Samples of wood specie which is to receive transparent finish, if requested by Architect.

##### 1.3 DELIVERY, HANDLING, & STORAGE

- A. Assemble work at mill and deliver ready for erection insofar as possible.
- B. Protect architectural woodwork from moisture and damage while in transit to job site. Unload and store in place where it will be protected from moisture and damage and convenient to use.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Lumber
  - 1. Grade -
    - a. No defects in boards smaller than 600 sq in.
    - b. One defect per additional 150 sq inches in larger boards.
    - c. Select pieces for uniformity of grain and color on exposed faces and edges.
    - d. No mineral grains accepted.
  - 2. Allowable Defects -
    - a. Tight knots not exceeding 1/8 inch in diameter. No loose knots permitted.
    - b. Patches (dutchmen) not apparent after finishing when viewed beyond 18 inches.
    - c. Checks or splits not exceeding 1/32" x 3" and not visible after finishing when viewed beyond 18 inches.
    - d. Stains, pitch pockets, streaks, worm holes, and other defects not mentioned are not permitted.
    - e. Normal grain variations, such as cats eye, bird's eye, burl, curl, and cross grain are not considered defects.
  - 3. Use maximum lengths possible, but not required to exceed 10 feet without joints. No joints closer than 6 feet in straight run.

4. Moisture content shall be 6% maximum at fabrication. No opening of joints due to shrinkage is acceptable.
- B. Panel Products
1. Core shall be medium density fiberboard with minimum weight of 37 lbs/cu ft.
  2. Facings -
    - a. Hardwood veneer shall be plain sliced AWI Grade AA, HPVA Grade AA, NWWDA premium Grade, or APA Grade A.
    - b. Melamine or Kortron.
  3. Edgings -
    - a. Exposed and semi-exposed edges of panel product with one or both faces having hardwood veneer shall have 3/4 inch by 1/4 inch edge-band of wood species matching hardwood face veneer.
    - b. Exposed and semi-exposed edges of panel product with both faces Melamine or Kortron shall have PVC 'T' molding.
  4. Glues used in manufacture of panel products shall be Type I or II.
  5. Moisture content shall be same as specified for lumber.

## 2.2 FABRICATION

- A. Fabricate work in accordance with measurements taken on job site.
- B. 'Ease' sharp corners of exposed members to promote finishing and protect users from slivers.
- C. Fabricate so veneer grain is vertical.
- D. Joints
1. Join members by pressure glue and biscuit joints, or pressure glue and dowels.
  2. Use lumber pieces with similar grain pattern when joining end to end.
  3. Compatibility of grain and color from lumber to panel products is required.
- E. Finish Tolerances
1. No planer marks (KCPI) allowed. Sand all wood members and surfaces to 100 grit.
  2. Maximum Gap - None allowed.
  3. Flushness Variation - 0.015 inch maximum.
  4. Sanding Cross Scratches - 0.250 inch maximum
  5. Plug screw holes. Screw locations not to be visible beyond 18 inches.
- F. Install hardware in accordance with Manufacturer's directions. Leave operating hardware operating smoothly and quietly.
- G. Remove or repair damaged surface of or defects in exposed finished surfaces of architectural woodwork to match adjacent similar undamaged surface.

## PART 3 EXECUTION - Not Used

END OF SECTION

**SECTION 06410**  
**CUSTOM CASEWORK**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Products Supplied But Not Installed Under This Section
  - 1. Custom casework
  - 2. Wall-hung counters
  
- B. Related Sections
  - 1. Section 06201 - Installation
  - 2. Section 06401 - General Architectural Woodwork Requirements
  - 3. Division 12 - Manufactured Casework
  - 4. Division 15 - Plumbing

**1.2 REFERENCES**

- A. American National Standards Institute
  - 1. ANSI A161.2-1979 (R1987), "Performance Standards for Fabricated High Pressure Decorative Laminate Countertops"
  
- B. National Electrical Manufacturer's Association
  - 1. NEMA LD 3-1991, "High Pressure Decorative Laminates"

**1.3 SUBMITTALS**

- A. See Section 01300.
  
- B. Product Data
  - 1. Manufacturer's literature or cut sheets for -
    - a. Plastic laminate
    - b. Hardware
    - c. Adjustable pulpit mechanism.
  - 2. Color selections.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Wood
  - 1. Exposed - Plain sawn Red Oak.
  - 2. Semi-exposed - Species as acceptable for AWI custom grade.

**2.2 COMPONENTS**

- A. Casework Doors
  - 1. Doors 1-3/8 inch or more thick shall be hollow core.
  - 2. Doors under 1-3/8 inch thick shall be solid core.
  
- B. Hardware
  - 1. Cabinet & Drawer Pulls -
    - a. US26D steel bow handles, 4 inches long minimum.
    - b. Quality Standard - 116.07.471 by Hafele, Archdale, NC (919) 889-2322
  - 2. Cabinet Adjustable Shelf Supports -
    - a. 32mm System -
      - 1) Vinyl coated steel, pin size 4.7 mm x 5/16"

- 2) Quality Standard - 348 by Knape & Vogt, Grand Rapids, MI (800) 253-1561
- b. Standard -
  - 1) Quality Standard - 255 & 256 by Knape & Vogt, Grand Rapids, MI (800) 253-1561
- 3. Cabinet Hinges -
  - a. Use number of hinges per leaf as recommended by Manufacturer.
  - b. Doors 4 Feet High or Less - European style, self-closing, 120 degree opening minimum.
  - c. Doors Over 4 Feet High -
    - 1) TB 2714 by Mckinney, Scranton, PA (717) 346-7551
    - 2) FBB 179 by Stanley, New Britain, CT (800) 622-4393
    - 3) BB 1279 by Hager, St Louis, MO (314) 772-4400
    - 4) BB 5000 by Bommer, Landrum, SC (803) 457-3301
- 4. Drawer Guides -
  - a. Full extension, steel ball bearings. 100 lb load rating for standard and pencil drawers, 150 for lateral file.
  - b. Approved Manufacturer -
    - 1) Pencil Drawers - 2006 by Accuride, Santa Fe Springs, CA (310) 903-0226
    - 2) Standard Drawers - 3832 by Accuride
    - 3) Lateral Files -
      - a) 30 Inch Wide Drawer & Under - 4034 by Accuride
      - b) Over 30 Inch Wide Drawer - 3640 by Accuride
- 6. Cabinet Surface Bolts (inactive leaf) -
  - a. Quality Standard - 043-2" by Ives, New Haven, CT (203) 772-0310
- 7. Cabinet & Drawer Locks -
  - a. Pin tumbler type suitable for location. Key individually by cabinet grouping shown on signage schedule. Stamp keys with Room number and cabinet designation.
  - b. Approved Manufacturers -
    - a. Chicago
    - b. Corbin Russwin
    - c. National
    - d. Or as approved by SUU Facilities Management

## 2.3 FABRICATION

- A. Cabinet Component Thickness & Material
  - 1. Use hardwood veneer facing except -
    - a. Cabinet interiors and shelving faces behind cabinet doors.
    - b. Cabinet interiors and shelving faces, exposed to sight and behind cabinet doors.
  - 2. Ends, Divisions, Bottoms, Tops - 3/4 inch panel product.
  - 3. Rails - 3/4 inch panel product.
  - 4. Shelves - Edge-banded panel product, 3/4 inch thick for spans up to 36 inches and one inch thick for spans 36 to 48 inches. Provide Hafele or equal center supports for spans over 48 inches.
  - 5. Backs - 1/4 inch nominal panel product.
  - 6. Doors - 3/4 inch panel product.
  - 7. Drawer Sides, Backs, & Subfronts - 1/2 inch panel product.
  - 8. Drawer Bottoms - 1/4 inch nominal panel product.
  - 9. Drawer Front - 3/4 inch panel product.
  - 10. Hardboard Dividers - 1/8 inch thick, smooth both sides. Color to match cabinet interior.
  - 11. Hardboard Shelves - 1/4 inch thick, smooth both sides. Color to match cabinet interior.
- B. Drawers to have guides.

## PART 3 EXECUTION - Not Used

END OF SECTION

## SECTION 06 450

### STANDING & RUNNING TRIM

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Products Supplied But Not Installed Under This Section
  - 1. Hardwood trim at light coves and windows.
- B. Related Sections
  - 1. Section 06 201 - Installation

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Interior Wood For Transparent Finish
  - 1. Solid wood shall be plain sawn Cherry.
  - 2. Stain per finish schedule.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Trim
  - 1. Install per standard practice.

END OF SECTION

## SECTION 07211

### UN-FACED BATT & BLANKET INSULATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install batt insulation in existing ceiling as described in Contract Documents.

##### 1.2 REFERENCES

- A. American Society For Testing And Materials
  - 1. ASTM C 665, "Specification for Mineral-Fiber Thermal Insulation For Light Frame Construction and Manufactured Housing"

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Insulation
  - 1. "Friction-Fit" unfaced batts, either 16 or 24 inches wide according to framing spacing.
  - 2. Order insulation by "R" factor rather than "U" factor, rating, or thickness and in accordance with ASTM C 665, Type I.
  - 3. "R" Factor - 19
  - 4. Approved Manufacturers
    - a. Certainteed Corp, Valley Forge, PA (800) 523-7844
    - b. Knauf Fiber Glass, Shelbyville, IN (317) 398-4434
    - c. Owens-Corning Fiberglass Corporation, Toledo, OH (800) 832-3585
    - d. U S Gypsum "Thermafiber", Chicago, IL (312) 606-4000
    - e. Western Fiberglass, Inc, Salt Lake City, UT (801) 972-1223
    - f. Equal as approved by Architect before bidding. See Section 01600.

##### 2.2 SOURCE QUALITY CONTROL

- A. Insulation shall be manufactured to be in compliance with IBC.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Install in accordance with Manufacturer's directions, in compliance with IBC, and as follows
  - 1. Leave no gaps in insulation envelope.
  - 2. Install insulation between framing, behind plumbing & wiring, and in similar places.
  - 3. Fit ends of batts snug against plates.
  - 4. Do not cover recessed light fixtures with insulation. Cut out insulation to provide 6 inch minimum clearance around recessed lighting fixtures.

END OF SECTION

## SECTION 07212

### FACED BATT & BLANKET INSULATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install thermal and acoustic batt insulation as described in Contract Documents.

##### 1.2 REFERENCES

- A. American Society For Testing And Materials
  - 1. ASTM C 665, "Specification for Mineral-Fiber Thermal Insulation For Light Frame Construction and Manufactured Housing"

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Insulation
  - 1. Kraft faced meeting requirements of ASTM C 665, Type II, Class C.
  - 2. Foil faced meeting requirements of ASTM C 665, Type III, Class B.
  - 3. Order insulation by "R" factor rather than "U" factor, rating, or thickness, either 16" or 24" wide according to framing spacing.
  - 4. "R" Factor Required -
    - a. Nominal Wood or Metal Framing
      - 1) 2x4 - 11
      - 2) 2x6 - 19
  - 5. Approved Manufacturers -
    - a. Certainteed Corp, Valley Forge, PA (800) 523-7844
    - b. Knauf Fiber Glass, Shelbyville, IN (317) 398-4434
    - c. Owens-Corning Fiberglass Corporation, Toledo, OH (800) 832-3585
    - d. U S Gypsum "Thermafiber", Chicago, IL (312) 606-4000
    - e. Western Fiberglass, Inc, Salt Lake City, UT (801) 972-1223
    - f. Equal as approved by Architect prior to bidding. See Section 01 600.

##### 2.2 SOURCE QUALITY CONTROL

- A. Insulation shall be manufactured to be in compliance with IBC.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Install in accordance with Manufacturer's directions, in compliance with UBC or other applicable building codes, and as follows
  - 1. If two layers of insulation are used to attain required "R" factor, only layer towards interior of building shall have facing.
  - 2. Leave no gaps in insulation envelope.
  - 3. Install insulation between jambs & framing, behind plumbing & wiring and in similar places.
  - 4. Fit ends of batts snug against top and bottom plates.
  - 5. Where insulation is not enclosed by structure or drywall, support in place with wire or other suitable material and use only foil faced insulation.

6. Install baffles between structure at ventilation spaces if necessary to prevent insulation from blocking air flow from soffit.
7. Do not cover recessed light fixtures with insulation. Cut out insulation to provide a minimum of 6 inch clearance around recessed lighting fixtures.

END OF SECTION

## SECTION 07920

### SEALANTS & CALKING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Quality of sealants to be used on Project not specified elsewhere, including submittal, material, and installation requirements.

##### 1.2 SUBMITTALS

- A. See Section 01300.
- B. Product Data
  - 1. Manufacturer's literature and installation recommendations for each Product.
  - 2. Schedule showing joints requiring sealants with backing and primer to be used.
- C. Quality Assurance/Control - Furnish certificate from Manufacturer indicating date of manufacture.

##### 1.3 DELIVERY, STORAGE, & HANDLING

- A. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
- B. Deliver and keep in original containers until ready for use.
- C. Do not use damaged or deteriorated materials.
- D. Store in a cool place, but never under 40 deg F.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Sealants
  - 1. Sealants provided shall meet Manufacturer's shelf-life requirements.
  - 2. Interior -
    - a. Inside jambs and heads of interior door frames
    - b. Approved Manufacturers & Products -
      - 1) Trademate Paintable by Dow Corning
      - 2) Acrylic Latex 834 by Tremco
      - 3) Or approved equal
  - 3. Interior Acoustical Sealants -
    - a. Perimeter joints and mechanical and electrical penetrations in sound insulated rooms.
    - b. Approved Products & Manufacturers -
      - 1) Sound Caulking by Ohio Sealants
      - 2) Acoustical Sealant by Tremco
      - 3) Acoustical Sealant by U S Gypsum
  - 4. Color - As selected by Architect from Manufacturer's standard colors.
- B. Backing - Flexible closed cell polyurethane or polyolefin rod or bond breaker tape as recommended by Sealant Manufacturer for joints being sealed.

## 2.2 MANUFACTURERS

- A. Dow Corning Corp, Midland, MI (800) 622-0661, EX 40
- B. G E Silicone Products, Waterford, NY (800) 255-8886
- C. Ohio Sealants Inc, Mentor, OH (800) 322-3578
- D. Tremco, Beachwood, OH 44122 (800) 321-7906
- E. U S Gypsum, Chicago, IL (800) 964-4874

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Remove existing sealants where required. Surfaces shall be clean, dry, and free of dust, oil, grease, dew, or frost.
- B. Apply primer.
- C. Joint Backing
  - 1. Rod for open joints shall be at least 1-1/2 times width of open joint and of thickness to give solid backing. Backing shall fill up joint so depth of sealant bite is no more than 3/8 inch deep.
  - 2. Apply bond-breaker tape in shallow joints as recommended by Sealant Manufacturer.

### 3.2 APPLICATION

- A. Apply sealant with hand-calking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint.
- B. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface.
- C. Depth of sealant bite shall be 1/4 inch minimum and 1/2 inch maximum, but never more than one half or less than one fourth joint width.
- D. Do not apply calking at temperatures below 40 deg F.
- E. Calk opening perimeters unless indicated otherwise.

### 3.3 CLEANING

- A. Clean adjacent materials which have been soiled immediately (before setting) as recommended by Manufacturer.

END OF SECTION

# SECTION 08 110

## HOLLOW METAL

### **PART 1 GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Pressed steel hollow metal frames.
  - 2. Fire-rated hollow metal frames.
  - 3. Hollow metal window-walls, glazed openings, and other hollow metal frames for glass.
  - 4. Rough bucks, frame reinforcing, closer reinforcements, clip angles and anchorage.
  - 5. Factory prime paint finish.
  - 6. Grouting of hollow metal frames with masonry mortar where not covered under other Sections.
- B. Related Sections:
  - 1. Section 04210 - Unit Masonry: Grouting of frames in masonry construction.
  - 2. Section 08710 - Hardware: Finish hardware, weather-stripping and sound-stripping.
  - 3. Section 08810 - Glazing: Glass and glazing.
  - 4. Section 09900 - Painting: Finish painting.
  - 5. Section 10210 - Metal Wall Louvers.
  - 6. Section 08305 - Access Panels.

#### **1.2 REFERENCES**

- A. ANSI A250.8-1998/SDI-100 - Recommended Specifications - Standard Steel Doors and Frames, Steel Door Institute, unless herein specified.
- B. Underwriters' Laboratories Inc. (UL) UL 10C-98 – Fire Tests of Door Assemblies.
- C. NFPA-80-1999 – Standard for Fire Doors and Windows.
- D. NFPA-101-1997 – Life Safety Code.
- E. NFPA-105 – Standard for Smoke and Draft Control Assemblies.
- F. ASTM-A 366-95A – Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.
- G. ASTM-A 568-95 – Specification for Steel, Sheet, Carbon, and High Strength, Low-Alloy, Hot-Rolled, and Cold-Rolled.
- H. ASTM-A 569-91a – Specification for Steel, Carbon, (0.15 maximum percent), Hot-Rolled Sheet and Strip Commercial Quality.
- I. ASTM-A 924-95 – General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process.
- J. SDI-105-92 – Recommended Erection Instructions for Steel Frames.
- K. ANSI A115.1-.18 - Specification for Door and Frame Preparation for Hardware.
- L. ANSI A156.7 - Standard Template Hinge Dimensions.

#### **1.3 SUBMITTALS**

- A. Shop Drawings: Submit in accordance with Section 01300. Indicate general construction, configurations, jointing methods, reinforcements, and location of hardware and cutouts for glass and louvers.

## 1.4 QUALITY ASSURANCE

- A. Applicable Standards: Specifications and standards of SDI 100-98.
- B. Wind Load Performance Requirements: Comply with wind load requirements of Uniform Building Code. Deflection shall not exceed 1/175 of span.
- C. Supplier Qualification: Qualified direct distributor of products to be furnished. The distributor shall have in their regular employment an A.H.C./C.D.C. or person of equivalent experience who will be available at reasonable times to consult with the Architect, Contractor and/or Owner regarding any matters affecting the total door and frame openings.
- D. Installer Qualification: Experience with installation of similar materials.
- E. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E152 "Standard Methods of Fire Tests of Door Assemblies" by nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.
  - 1. Oversize Fire-Rated Door Assemblies: For door assemblies required to be fire-rated and exceeding sizes of tested assemblies, provide certificate or label from approved independent testing and inspection agency, indicating that door and frame assembly conforms to requirements of design, materials and construction as established by individual listings for tested assemblies.
  - 2. Temperature Rise Rating: At stairwell enclosures, provide doors which have Temperature Rise Rating of 450 degrees F maximum in 30 minutes of fire exposure.

## 1.5 PRODUCT HANDLING

- A. Deliver hollow metal in manufacturer's protective covering. Handle hollow metal with care to prevent damage.
- B. Frame Storage: Store frames under cover on 4 inch wood sills on floors in manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. Store assembled frames in vertical position, 5 units maximum in stack. Provide 1/4 inch space between frames to promote air circulation.

## 1.6 SEQUENCING AND SCHEDULING

- A. Deliver frames to the jobsite in a timely manner so as not to delay progress of other trades.

## **PART 2 PRODUCTS**

### 2.1 HOLLOW METAL

- A. Acceptable Manufacturers: (providing the products supplied comply with the provisions of this specification) Curries, Ceco, Fleming.
- B. Cold Rolled Steel Sheets: Commercial quality, stretcher leveled flatness, cold-rolled steel, free from scale, pitting or other surface defects, complying with ASTM A366 and A568 general requirements.
- C. Galvanealed Steel Sheets: ASTM A924, A60 zinc coating. Use galvanealed steel sheets for exterior hollow metal doors, door frames and door louvers. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM-A569.
- D. Minimum gauges of hollow metal are specified below. Provide heavier gauge if required by details or specific condition. Entire frame and sidelight shall be of same gauge.
  - 1. 16 gauge: Interior door frames, and glazed opening frames.
  - 2. 16 gauge: Labeled frames (or heavier if required by label).
  - 3. 18 gauge: Interior doors (or heavier if required by label).

4. 14 gauge: Exterior door frames, window-wall and window frames, transom and sidelight frames.
  5. 20 gauge: Trim members.
- E. Coating Materials, primer: Use manufacturer's standard rust inhibiting primer conforming to ANSI-A224.1-1990.

## **2.2 RELATED MATERIALS**

- A. Steel Reinforcing: ASTM A36.
- B. Door Bumpers or Silencers: Per ANSI A156.16.

## **2.3 HOLLOW METAL FRAMES**

- A. General: Form to profiles indicated. Where necessary, alternate details will be considered provided design intent is maintained. Consider and provide for erection methods.
- B. Typical Reinforcing: Provide minimum hinge reinforcement 3/16 inch by 1-1/2 inch by 10 inch. Provide similar reinforcement for hardware items as required to adequately withstand stresses, minimum 12 gauge, including channel reinforcement for door closers and closer arms, door holders and similar items. Provide reinforcement and clearances for concealed in-head door closers and for mortise locks.
- C. Cover Plates: For hinge and strike plate cutouts, provide fully enclosed pressed steel cover boxes spot welded to frames behind mortises.
- D. Hardware: Mortise, reinforce, drill and tap for mortise hardware, except drilling and tapping for surface door closers, door closer brackets and adjusters shall be done in field.
- E. Anchorage: Provide standard and special anchorage items as required. Provide formed steel channel spreader at bottom of frames, removable without damaging frame. At masonry, provide anchors (about 2 inch by 10 inch) approximately 24 inches on center.
- F. Silencers: Provide specified silencers, except where stop does not occur and at smoke gasketed openings, 3 per jamb at single door and one for each door at double doors.
- G. Extensions: Reinforce transom bars or mullions as necessary to provide rigid installation. Where required (as at multiple openings) to stabilize large frames, provide frame or mullion extensions to anchor to structure above, proper size to fit within overhead construction. Provide angle clips to fasten to structure.
- H. Mullions: Provide mullions, straight and without twist, of tubular design. For removable mullions provide reinforcing at frame head.
- I. Clearances: Provide and be responsible for proper clearances at metal frames, including for weatherstripping, soundstripping and smoke gasketing. Glass clearance shall be thickness of glass plus clearance each side (1/8 inch minimum exterior - 1/16 inch minimum interior), adjust for installation, glass thickness to allow for glazing and sealant. Where sealed double glazing is indicated, provide rebates minimum of 3/4 inch and provide 1/4 inch clearance at glass edges. Where units fit around concrete blocks (blocks built into frames) obtain actual dimensions of blocks being used to establish minimum clearances.
- J. Drip Cap: Galvanized steel field painted per 09900. Secure to frame at exterior doors
- K. Stops: Set with countersunk or Jackson head screws.
  1. Hospital Stops: On all doors except lead lined doors, doors in 2-hour fire rated partitions and one hour smoke and fire rated partitions; stops shall be cut at 6 inches above floor with 45 degree miter and welded closed.
- L. Labeled Frames: Construct in accordance with requirements for labeled work. Attach proper U.L. label, Warnok Hersey. "B" labeled frames shall be 1-1/2 hour construction.

- M. Joinings: At frames with equal width jambs and head, neatly miter on face (except locations as at transom bars and at frames with large head members). Cope and butt stops. Weld length of entire joint, including face and flat intersections. Grind smooth, at other frames, provide same mitered joint wherever possible (at intersection of jamb-head or jamb-sill) and at other locations butt metal neatly and full weld. If tight butt joints are utilized, joints shall be neatly caulked smooth.
- N. Workmanship: Fabricate so no grind marks, hollow or other out-of-plane areas are visible. At joints of intermediate members (such as mullions and transom bars), provide tight joining, neatly accomplished without holes, burned out spots, weld build up or other defacing work. Fill to close cracks and to preserve shapes. Tightly fit loose stops, to hairline joints.
- O. Finish: Clean frames by degreasing process and apply thorough coating of baked-on primer, covering inside as well as outside surfaces. At galvanealed frames, coat welds and other disrupted surface with zinc-rich paint containing not less than 90 percent zinc dust by weight.

## **2.4 FASTENINGS**

- A. Provide fastenings, anchors and clips as required to secure hollow metal work in place. Provide Jackson head screws, or flatter. Dimple metal work to receive screw heads. Set stops and other non-structural fastenings with #6 Jackson head self-tapping screws.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Examine supporting structure and conditions under which hollow metal is to be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Install hollow metal in accordance with reviewed shop drawings and manufacturer's printed instructions. Securely fasten and anchor work in place without twists, warps, bulges or other unsatisfactory or defacing workmanship. Set hollow metal plumb, level, square to proper elevations, true to line and eye. Set clips and other anchors with Ramset "shot" anchors or drill in anchors as approved. Units and trim shall be fastened tightly together, with neat, uniform and tight joints.
- B. Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged. In masonry construction, building-in of anchors and grouting of frames with mortar is specified in Section 04210 - Unit Masonry. At in-place concrete or masonry construction, set frames and secure in place using countersunk bolts and expansion shields, with bolt heads neatly filled with metallic putty, ground smooth and primed.
- C. Place fire-rated frames in accordance with NFPA Standard #80.

### **3.3 ADJUSTING AND CLEANING**

- A. Prime Coat Touch-Up: Immediately after installation, sand smooth rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

**END OF SECTION**

# SECTION 08 210

## WOOD DOORS

### **PART 1 GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Prefinished standard and fire rated type wood doors with flush faces.
  - 2. Prefit and premachine pre-finished wood doors.
- B. Related Sections:
  - 1. Section 06100 - Rough Carpentry.
  - 2. Section 08110 - Hollow Metal Doors and Frames.
  - 3. Section 08710 - Hardware.
  - 4. Section 08810 - Glazing: Glass and glazing for doors.
  - 5. Section 06405 - Architectural Woodwork.

#### **1.2 REFERENCES**

- A. WDMA – Window and Door Manufacturers Association: IS 1-A 1997 Industry Standard for Architectural Flush Wood Doors.
- B. NFPA-80 Standards for Fire Doors.
- C. Uniform Building Code: UBC 7-2 1997, Fire Test of Door Assemblies.

#### **1.3 SUBMITTALS**

- A. Shop Drawings and Product Data:
  - 1. Submit in accordance with Section 01330.
  - 2. Indicate general construction, jointing methods, hardware and louver locations, and locations of cut-outs for glass. Indicate thickness of veneers.
- B. Samples:
  - 1. Submit samples of wood veneer and factory finishing in accordance with WDMA Quality Standards I.S. 1-A 1997, sections G-18 and Guide Specifications 1.03 C.
- C. Certification:
  - 1. Submit certification that doors and frames comply with UBC 7-2 1997.

#### **1.4 QUALITY ASSURANCE**

- A. Fire-Rated Wood Doors: Provide wood doors which are identical in materials and construction to units tested in door and frame assemblies in accordance NFPA 252 and which are labeled and listed for ratings indicated by ITS – Warnock Hersey, UL or other testing and inspection agency acceptable to authorities having jurisdiction.
  - 1. Doors: Comply with UBC 7-2 1997 where required.
  - 2. Provide intumescent requirements in compliance with UL-10C.
- B. WDMA I.S. 1-A 1997 Quality Standard: Window and Door Manufacturers Association Quality Standards for grade of door, core, construction, finish, and other requirements.
- C. Temperature Rise Rating: At stairwell enclosures, provide doors which have Temperature Rise Rating of 250 degrees F maximum in 30 minutes of fire exposure.

## **1.5 PRODUCT HANDLING**

- A. Plastic wrap and protect wood doors during transit, storage and handling to prevent damage, soiling or deterioration. Follow the Care and Installation guidelines as described in WDMA I.S. 1-A 1997.

## **1.6 GUARANTY/WARRANTY**

- A. Guarantee: Provide manufacturer's guarantee for all wood doors. Guarantee period: Lifetime of original installation. Doors exhibiting defects in materials or workmanship including warp and delamination within guarantee period shall be replaced (including hanging and finishing) with new doors. These terms shall be part of the manufacturer's standard warranty.

## **PART 2 PRODUCTS**

### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Graham Manufacturing
- B. Eggers Industries
- C. Algoma Hardwoods

### **2.2 MATERIALS**

- A. Door Construction:
  - 1. Non-Fire Rated Doors: Thickness: 1-3/4 inches, interior flush wood, bonded, solid core conforming to WDMA I.S. 1-A 1997 and the following;
    - a. Core: bonded particle core (PC) conforming to WDMA I.S. 1-A 1997.
    - b. Door construction shall conform to WDMA I.S. 1-A 1997 Premium Grade requirements.
    - c. Stiles: Hardwood to match face veneer over structural composite lumber (SCL), glued to core.
    - d. Rails: Mill option hardwood or SCL. Top and bottom: 2 inches.
    - e. Facing: Wood veneer as specified.
  - 2. Fire Rated Doors: Thickness: 1-3/4 inches, interior flush wood, bonded, solid core conforming to WDMA I.S. 1-A 1997 and the following;
    - a. Core: bonded mineral core (FD) conforming to WDMA I.S. 1-A 1997.
    - b. Door construction shall conform to WDMA I.S. 1-A 1997 Premium Grade requirements.
    - c. Stiles: Hardwood to match face veneer over mineral composite, glued to core.
    - d. Rails: Mineral composite as required by fire door authorities. Top and bottom: as required by manufacturer's fire door authorities.
    - e. Facing: Wood veneer as specified.
- B. WOOD VENEER
  - 1. Door face veneers shall meet HPVA "A" grade quality standards conforming to WDMA I.S. 1-A for transparent or semi-transparent finish. Minimum face veneer thickness shall be 1/50" at 12% moisture content after finish sanding.
  - 2. Species: Red Oak.
  - 3. Face Cut: Plain Sliced
  - 4. Face Assembly: Book Match
  - 5. Face Symmetry: Balanced Match
- C. ADHESIVES
  - 1. Adhesives: Face to core adhesives shall be Type I or Type II as appropriate for location in building. Adhesives must be classified Type I or Type II per WDMA TM-6 "Adhesive Bond Test Method", or PUR adhesive. Type I adhesives shall be used for doors in exterior applications, Type II adhesives shall be used for doors in interior applications.
- D. CORE
  - 1. Non-rated and 20 minute doors: Solid particleboard.

2. Fire-rated doors: Non-combustible mineral core containing no asbestos.

### **2.3 FACTORY FINISHING**

1. Comply with referenced WDMA Section G-15, "Factory Finishing."
2. Pre-finish wood doors at factory.
3. Transparent Finish: Match finish indicated in WDMA Section G-17: WDMA System #6.

### **2.4 FABRICATION**

- A. Fabricate wood doors in accordance with requirements of WDMA I.S. 1-A 1997 Quality Standards.
- B. Fabricate fire rated doors in accordance with requirements of ITS – Warnock Hersey or Underwriters' Laboratories, with metal label on each door including UL-10C.
- C. Fabricate doors with WDMA Quality Standards hardware blocking options as follows:
  1. Provide HB-1 – head and HB-2 – sill rails and HB-4 – lockblock on all doors.
  2. Provide HB-6 only when exit devices are specified for door.
  3. Provide HB-8 for pivots or when floor bolts are specified under Section 08710 – Finish Hardware.
- D. Provide doors with minimum ¼ inch thick edge strips, of wood species to match face veneers except as required for fire rating.
- E. Make cut-outs and provide stops for glass and louvers. Install metal door louvers. Seal cut-outs prior to installation of moldings.
  1. For full light doors: Provide cut out from flush wood door, with vertical grain direction.
- F. Bevel lock and hinge edges of single acting doors 3 degrees or 1/8 inch in 2 inches. Radius strike edge of double acting swing doors as required by pivot hinge manufacturer.
- G. Prepare doors to receive hardware. Refer to Section 08710 - Hardware and NFPA 80 for hardware requirements including UL-10C.
  1. Prefit and bevel to net opening size less approximately 1/4 inch in width on single swing doors 3/16 inch in width for paired doors. Provide 1/4 inch clearance above finished floor, unless otherwise indicated on drawings. Provide 1/8 inch clearance at top of door.
  2. Slightly ease vertical edges.
- H. Fire Rated Pair of Doors; greater than 20 minute: Supply overlapping astragals or metal edge sets only as required by NFPA 80 1999 or by door manufacturer's fire door authorities. If an astragal is required, to comply with fire rated labeling requirements for pairs of fire rated doors, provide door manufacturer's standard tested astragal.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Examine installed door frames before hanging doors.
- B. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Handle doors in accordance with recommendations of WDMA I.S. 1-A, "Care and Installation at Job Site."

- B. Condition doors to average temperature and humidity in area of installation for not less than 48 hours prior to installation. Store doors per recommendations of WDMA I.S. 1-A, "Care and Installation at Job Site."
- C. Install in neat and workmanlike manner, free from hammer or tool marks, open joints or slivers.
- D. Set plumb, level, square and true. Install work after building humidity is at acceptable level.
- E. Remove and replace all doors found to be warped, twisted, bowed, or otherwise damaged. Do not install doors which cannot be properly fitted to frames.
- F. Adjust prefinished doors and hardware and other moving or operating parts to function smoothly and correctly.
- G. If doors are to be field finished, the process must follow the WDMA I.S. 1-A, "Care and Handling at Job Site" instructions for field applied finishes.
- H. Ensure that smoke gaskets are in-place before prefinished door installation.

### **3.3 CLEANING AND PROTECTION**

- A. Clean prefinished doors and hardware.
- B. At clear finished doors, do not partially cover door surfaces with paper, cardboard, or any other opaque covering that will create uneven aging of wood veneer.
- C. Protect doors as directed under Section 01700.
- D. Refinish or replace finished doors damaged during installation.

**END OF SECTION**

# SECTION 08 710

## DOOR HARDWARE

### PART 1: GENERAL

#### 1.01 SECTION INCLUDES

- A. Finish hardware for doors as specified and as listed in "Hardware Groups: and required by actual conditions."
  - 1. Include screws, special screws, bolts, special bolts, expansion shields and other devices for proper application of hardware.
- B. Related Sections:
  - 1. Section 06101: Carpentry
  - 2. Section 08110, Section 08120 and Section 08211- Certain hardware items installed with doors.
  - 3. Division 16: Electrical

#### 1.02 GENERAL REQUIREMENTS

- A. Provide items, articles, material, operations and methods listed, mentioned or scheduled herein or on drawings, in quantities as required to complete project. Provide hardware that functions properly. Prior to furnishing hardware, advise Architect of items that will not operate properly, are improper for conditions, or will not remain permanently anchored.

#### 1.03 SUBMITTALS

- A. Hardware Schedule: Submit 5 copies of hardware schedule in vertical format as illustrated by the Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Schedules which do not comply will be returned for correction before checking.
- B. Hardware schedule shall clearly indicate architect's hardware group and manufacturer of each item proposed.
- C. The schedule shall be reviewed prior to submission by a certified Architectural Hardware Consultant (AHC), who shall affix his or her seal attesting to the completeness and correctness of the schedule:
  - 1 Provide two (2) copies of illustrations from manufacturer's catalogs and data in brochure form.
  - 2 Check specified hardware for suitability and adaptability to details and surrounding conditions. Indicate unsuitable or incompatible items and proposed substitutions in hardware schedule.
  - 3 Provide listing of manufacturer's template numbers for each item of hardware in hardware schedule.
  - 4 Furnish other Contractors and Subcontractors concerned with copies of final approved hardware schedule. Submit necessary templates and schedules as soon as possible to hollow metal, wood door and aluminum door fabricators in accordance with schedule they require for fabrication..
  - 5 Samples: Lever design or finish sample: Provide 3 samples if requested by architect.
- D. Installation Instructions: Provide manufacturer's written installation and adjustment instructions for finish hardware. Send installation instructions to site with hardware.
- E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.
- F. Contract Closeout Submittals: Comply with Section 01700 including specific requirements indicated below:
  - 1 Operating and maintenance manuals: Submit 3 sets containing the following:

- a. Complete information in care, maintenance and adjustment, and data on repair and replacement parts and information on preservation of finishes.
- b. Catalog pages for each product.
- c. Name, address and phone number of local representative for each manufacturer.
- d. Parts list for each product.
- e. Copy of final approved hardware schedule, edited to reflect "As Installed".
- f. Copy of final keying schedule.
- g. As installed "Wiring Diagrams" for each opening connected to power, both low voltage and 110 volts.
- h. One complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- i. One dogging key for each exit device.

G. On additions and renovations to existing facilities, contractor shall meet with owner to determine specific owner requirements regarding keying, special applications, brands, etc. and advise Architect if any revisions to the specification are required. Any changes to the specification must be in writing. Verbal authorization is not considered as valid.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer: Obtain each type of hardware (i.e. latch, and locks, hinges, closers, etc.) from single manufacturer, although several may be indicated as offering products complying with requirements. Where hardware may be furnished by more than one supplier, provide hardware to match the preponderance of building hardware.
- B. Supplier: Recognized architectural finish hardware supplier, with warehousing facilities within 100 miles of the jobsite, who has been providing hardware for a period of not less than 3 years. The supplier shall be, or employ, a certified Architectural Hardware Consultant (AHC). The hardware schedule shall be prepared and signed by a certified Architectural Hardware Consultant (AHC).
- C. Installer: Firm with 3 years experience in installation of similar hardware to that required for this project, including specific
- D. Regulatory Label Requirements: Provide nationally recognized testing agency label or stamp on hardware for labeled openings. Where UL requirements conflict with drawings or specifications, hardware conforming to UL requirements shall be provided. Conflicts and proposed substitutions shall be clearly indicated in hardware schedule.
- E. Pre-Installation Conference: Prior to the installation of hardware, manufacturer's representatives for locks, closers and exit devices shall arrange and hold a jobsite meeting to instruct the installing contractor's personnel on the proper installation of their respective products. A letter of compliance, indicating when this meeting is held and who is in attendance, shall be sent to the Architect and Owner.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver hardware to jobsite in manufacturer's original packaging, marked to correspond with approved hardware schedule. Do not deliver hardware until suitable locked storage space is available. Check hardware against reviewed hardware schedule. Store hardware to protect against loss, theft or damage.
- B. Deliver hardware required to be installed during fabrication of hollow metal, aluminum, wood or stainless steel doors prepaid to manufacturer.

#### 1.06 WARRANTY

- A. Guarantee workmanship and material provided against defective manufacture. Repair or replace defective workmanship and material appearing within a period of one year after Substantial Completion.

- B. Provide ten year warranty on door closer body against defects in material and workmanship from date of occupancy of Project.
- C. Replace shortages and incorrect items with correct material at no additional cost to Owner.

**PART 2: PRODUCTS**

**2.01 HINGES**

- A. Acceptable Manufacturers and Types:

[McKinney](#)  
 T4A3786  
 TA2714  
 TA2314  
 T4A3786  
 T4A3386

- B. Non-removable pins (NRP):

- a. Provide NRP (non-removable pins) at outswing lockable doors.

- C. Size:

- a. 2-1/4" thick doors                      5" X 5"
- b. 1-3/4" thick doors                      4-1/2" X 4-1/2"
- c. 1-3/8" thick doors                      3-1/2" X 3-1/2"

- D. Quantity:

- a. 2 hinges per leaf for openings through 60 inches high.
- b. 1 additional hinge per leaf for each additional 30 inches in height or fraction thereof.
- c. 4 hinges for Dutch doors up to 90 inches in height.

- E. Drill 5/32 inch hole and use No. 12, 1-1/4 inch steel, threaded to the head, wood screws for hinges on wood doors.;

**2.02 LOCKSETS- MORTISE**

- A. Acceptable manufacturers and Series:

[Sargent](#)   [Yale](#)   [Corbin/ Russwin](#)  
 8200      8800      ML2000

- B. Provide lock functions specified in Hardware Groups, with the following provisions:

- a. Locks shall meet the requirements of ANSI/BHMA A156.13-2005, operational Grade 1 and Security Grade 1.
- b. Backset: 2-3/4"
- c. Strikes: Provide wrought boxes and strikes with proper lip length to protect trim but not to project more than 1/8" beyond trim, frame or inactive leaf. Where required, provide open back strike and protect with astragal to allow practical and secure operation.
- d. All locks and latches must be BHMA certified.

**2.03 EXIT DEVICES**

A. Acceptable manufacturers and Series:

[Sargent](#)  
80 Series

[Yale](#)  
7000 Series

[Corbin/ Russwin](#)  
ED5000 Series

- B. Provide exit device series and functions as specified in Hardware Groups.
- C. All exit devices shall be UL listed for panic. Exit devices for labeled doors shall be listed as "Fire Exit Hardware".
- D. Where lever trim is specified, provide lever design to match lock levers.
- E. Provide cylinders for key locking mullions and exit devices with locking trim.
- F. Provide keyed removable mullions as specified in the Hardware Groups.
- G. All exit devices must be BHMA certified.

#### 2.04 KEYING

A. Acceptable manufacturers and Series:

Match owner's existing master key system.

- B. Master key or Grand master key cylinders and key in groups, unless otherwise specified. Factory masterkey with manufacturer retaining permanent keying records.
- C. Provide 6 masterkeys for each masterkey set. Provide 3 change keys for each lock. Provide 2 control keys for core removal. Stamp keys "DO NOT DUPLICATE".
- D. Submit proposed keying schedule to Architect. If requested, meet with Owner and Architect to review keying schedule.

#### 2.05 DOOR TRIM

A. Acceptable manufacturers and Series:

<a href="#">McKinney</a>	Rockwood	Trimco
PO53	70C	1001-3
DP503	110 X 70C	1010-3
OP810	BF15747	1737
KP50	K1050	KO050

- B. Pulls: Where required, mount back to back with push bars.
- C. Kick and Armor Plates: Minimum of .050" thick, beveled 4 edges.
- D. At single and pairs of doors provide kick and armor plates 2" less door width (2" LDW).
- E. Provide kick plates at a height of 10" unless otherwise specified.

#### 2.06 DOOR CLOSERS

A. Acceptable manufacturers and Series:

[Norton](#)      [Sargent](#)      [Yale](#)      [Corbin Russwin](#)  
7500/PR7500    351/351-P10    4400/PR4400    DC8000

- B. Provide non-sized closers, adjustable to meet maximum opening force requirements of ADA.
- C. Provide drop plates, brackets or adaptors for arms and as required to suit details.
- D. Install closers on room side of corridor doors, inside of exterior doors and stair side of stairway doors.
- E. Provide back check for door closers.
- F. Provide hold open arms where specified.
- G. Provide closers as specified in Hardware Groups and, in addition, provide closers for labeled doors whether or not specifically noted in Hardware Groups.
- H. Provide closers meeting the requirements of UBC7-2, 1997 and UL 10C positive pressure tests.

## 2.07 STOPS AND HOLDERS

- A. Acceptable manufacturers and Series:

<a href="#">McKinney</a>	Trimco	Rockwood
WS01	1270WX	406
WS02	1270WV	409
FS01	1211	443
FS29	1214	481
FS30	1214H	481H

- B. Provide wall stops as applicable for each door leaf, except where floor stops are specified in Hardware Groups, or where conditions require the use of an overhead stop.
- C. Provide an appropriate carpet rise for floor stops, as needed.

## 2.08 FASTENERS

- A. Use only manufacturer supplied fasteners to anchor, attach or otherwise install all pieces of hardware.
- B. Install all door closers and exit devices with machine screws, whether or not self-tapping (self drilling) fasteners are offered by the manufacturer. Provide sex bolts (SNB) at fire rated wood doors unless proper blocking is provided by the door manufacturer.
- C. Use phillips head at all exposed screws. Aluminum screws are not acceptable to attach or install any hardware.
- D. Provide self-tapping (self-drilling) screws for attachment of sweeps and stop applied weatherstrip only.
- E. Replace all fasteners that have damaged heads due to inappropriate installation methods.

## 2.09 FINISHES AND MATERIALS

- A. Hinges:
  - a. Exterior- BHMA 630 (US32D)
  - b. Interior- BHMA 652 (US26D)
- B. Continuous Hinges

- a. BHMA 628 (US28)
- C. Flush Bolts
  - a. BHMA 626 (US26D)
- D. Exit Devices
  - a. BHMA 630 (US32D)
- E. Locks and Latches
  - a. BHMA 626 (US26D)
- F. Pulls, Push Plates, Push Bars
  - a. BHMA 630 (US32D)
- G. Coordinators
  - a. BHMA 600 (USP)
- H. Kick Plates, Armor Plates and Edge Guards
  - a. BHMA 630 (US32D)
- I. Overhead Stops and Holders
  - a. Exterior- BHMA 630 (US32D)
  - b. Interior- BHMA 652 (US26D)
- J. Surface Mounted Door Closers
  - a. BHMA 689 (Painted Aluminum)
- K. Latch Protectors
  - a. BHMA 630 (US32D)
- L. Miscellaneous Hardware
  - a. BHMA 626 (US26D)

### **PART 3: EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine doors, frames and related items for conditions that would prevent the proper application of finish hardware. Do not proceed until defects are corrected.

#### **3.02 INSTALLATION**

- A. Install finish hardware in accordance with reviewed hardware schedule and manufacturer's printed instructions. Prefit hardware before finish is applied: remove and reinstall after finish is completed. Install hardware so that parts operate smoothly, close tightly and do not rattle.
- B. Installation of hardware shall comply with NFPA 80 and NFPA 101.
- C. Set units level, plumb and true to line and location. Adjust and reinforce attachment to substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

- E. Set thresholds for exterior doors in full bed of butyl rubber or polyisobutylene mastic sealant, forming tight seal between threshold and surface to which set. Securely and permanently anchor thresholds using countersunk, non-ferrous screws to match color of thresholds. Provide stainless steel screws at aluminum thresholds.

### 3.03 FIELD QUALITY CONTROL

- A. At completion of project, a qualified Architectural Hardware Consultant (AHC) as certified by the Door and Hardware Institute shall inspect hardware installation. After this inspection, a letter shall be sent to Architect reporting on conditions, verifying that hardware has been properly installed and adjusted. Any deficiencies noted shall be corrected prior to final payment.

### 3.04 ADJUSTING AND CLEANING

- A. At final completion, hardware shall be left clean and free from disfigurement. Make final adjustment to door closers and other items of hardware. Where hardware is found defective, repair, replace or otherwise correct as directed.
- B. Adjust door closers to meet opening force requirements of Uniform Federal Accessibility Standards.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of space or area, return to work during week prior to acceptance of occupancy and make final check and adjustment of hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware.
- D. Instruct Owner's personnel in proper adjustment and maintenance of door hardware and hardware finishes.
- E. Clean adjacent surfaces soiled by hardware installation.

### 3.05 PROTECTION

- A. Provide for proper protection of items of hardware until Owner accepts Project as complete.

### 3.06 HARDWARE GROUPS:

#### SET #01

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Office Lock	8205 LNP LC	26D	SA
1 Mortise Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

#### SET #02

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Passage Latch	8215 LNP	26D	SA
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

#### SET #03

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Push Plate	P053	US32D	MC
1 Door Pull	DP503	US32D	MC
1 Closer	7500	689	NO
1 Kickplate	KP50 10" X 2" LDW	US32D	MC
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

**SET #04**

3 Hinges	TA2714 4 1/2 X 4 1/2 NRP	26D	MC
1 Exit Device	43 8504 Less Pull/ Less Cylinder	32D	SA
1 Rim Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1 Door Pull	VR02	US32D	MC
1 Closer	PR7500	689	NO
1 Kickplate	KP50 10" X 2" LDW	US32D	MC
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

**SET #05**

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Communicating Door Lock	8226 LNP LC	26D	SA
2 Mortise Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1 Closer	PR7500	689	NO
1 Kickplate	KP50 10" X 2" LDW	US32D	MC
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

**END OF SECTION**

## SECTION 09110

### NON-LOAD BEARING METAL FRAMING SYSTEMS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install complete metal stud wall and furring system as described in Contract Documents.
- B. Related Sections
  - 1. Division 05 - Load-bearing metal framing system

##### 1.2 REFERENCES

- A. American Society For Testing And Materials
  - 1. ASTM C 645-94, "Standard Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Tracks), and Rigid Furring Channels for Screw Application of Gypsum Board"

##### 1.3 SUBMITTALS

- A. See Section 01300.
- B. Shop Drawings - Show special components and installations not fully dimensioned or detailed in Manufacturer's Product data.
- C. Quality Assurance/Control
  - 1. Manufacturer's technical product data, installation instructions, and recommendations for each component of system.
  - 2. Mill 'Prime Steel' certifications.
  - 3. ICBO Evaluation Report

##### 1.4 QUALITY ASSURANCE

- A. Regulatory Requirements - ICBO approved.
- B. Certifications - Mill certified 'Prime Steel' required.
- C. Pre-Installation Meeting
  - 1. See Section 01200.
  - 2. Schedule meeting after submittals have been reviewed and returned by Architect, but before beginning metal framng work.

#### PART 2 PRODUCTS

##### 2.1 COMPONENTS

- A. Framing
  - 1. 20 gauge minimum meeting requirements of ASTM C 645.
  - 2. Approved Manufacturers -
    - a. 20HDS Series by Angeles Metal Systems, Los Angeles, CA (800) 366-6464
    - b. 362DS20P by CEMCO, City of Industry, CA (800) 775-2362
    - c. Drywall Metal (20 ga only) by Clark Framing Systems, Cincinnati, OH (800) 543-7140
    - d. Any member of ML/SFA Division of NAAMM

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Specifications of Stud Wall Manufacturer shall govern this work unless more stringent requirements are specified below or are detailed on Drawings.
- B. Stiffen stud walls with 3/4 inch cold-rolled channels placed horizontally approximately 4 feet from floor and securely attach to each stud. Similarly reinforce door and window openings at headers with reinforcing channel extending 1'6" minimum each side of opening.
- C. Wrap multiple, adjacent framing members with duct tape or otherwise secure to eliminate 'chattering.'
- D. Use grommets at framing penetrations where unsecured items pass through.

END OF SECTION

## SECTION 09130

### ACOUSTICAL PANEL SUSPENSION SYSTEM

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install acoustical suspension system as described in Contract Documents to receive acoustical ceiling panels.
- B. Related Sections
  - 1. Division 26 - Light fixtures in ceilings

##### 1.2 REFERENCES

- A. American Society For Testing And Materials
  - 1. ASTM C 635, "Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile & Lay-In Panel Ceilings"
  - 2. ASTM C 636, "Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile & Lay-In Panels"

##### 1.3 QUALITY ASSURANCE

- A. Regulatory Requirements - Meet seismic bracing requirements of IBC.

#### PART 2 PRODUCTS

##### 2.1 COMPONENTS

- A. Systems shall meet requirements of ASTM C 635, Intermediate Duty or Heavy Duty.
- B. Exposed surfaces shall be finished with factory-applied white baked enamel.
- C. Main runners and cross T's shall have one inch exposed face.
- D. Hanger Wire - 12 gauge cold-rolled electro-galvanized steel.
- E. Edge Molding - Channel section of cold-rolled electro-galvanized steel.
- F. Hold-down Clips - As required by UL to prevent lifting of panels under unusual draft conditions.
- G. Design Standards - DX or DXL Systems by USG Interiors

##### 2.2 APPROVED MANUFACTURERS

- A. Armstrong World Industries, Lancaster, PA (800) 448-1405
- B. Chicago Metallic Corporation, Chicago, IL (800) 323-7164
- C. USG Interiors Inc, Chicago, IL (800) 950-3839
- D. National Rolling Mills Inc, Malvern, PA (215) 644-6700

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Work shall be in accordance with Manufacturer's recommendations insofar as they are concerned with Contract Documents. Installation shall meet requirements of ASTM C 636.
- B. Lay out suspension system symmetrically about center lines of room unless shown otherwise by Drawings.
- C. Leave suspension system in true plane with straight, even joints.
- D. Suspension system joints shall be straight and in alignment, and exposed surface flush and level. Wherever system abuts walls, columns, and other vertical surfaces, furnish and install appropriate molding.
- E. Locate fixtures symmetrically in room insofar as possible (unless shown otherwise). Locate fixtures within suspension system spaces.
- F. Pay particular attention to required hanger wire placement and fixture protection. Individual component deflection not to exceed  $1/360$  of span.
- G. Do not attach suspension system to adjustable folding partition headers.

END OF SECTION

## SECTION 09260

### GYPSUM WALLBOARD

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install gypsum wallboard as described in Contract Documents.
  - 2. Furnish and install acoustical sealants as described in Contract Documents.
- B. Related Sections
  - 1. Division 06 -
    - a. Backblocking of gypsum wallboard joints
  - 2. Division 07 - Quality of acoustical sealants

##### 1.2 REFERENCES

- A. GA-214 - "Recommended Specification: Levels of Gypsum Board Finish," by following organizations -
  - 1. Gypsum Association
  - 2. Painting and Decorating Contractors of America
  - 3. Ceilings & Interior Systems Construction Association
  - 4. Association of the Wall and Ceiling Industries International
- B. American Society For Testing And Materials
  - 1. ASTM C 36, "Specification for Gypsum Wallboard"
  - 2. ASTM C 475, "Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board"
  - 3. ASTM C 1002, "Specification for Steel Drill Screws for Application of Gypsum Board or Metal Plaster Bases"

##### 1.3 SUBMITTALS

- A. See Section 01300.
- B. Quality Control - Submit fire test results or assembly diagrams and numbers confirming products used will provide required fire ratings with installation configurations used.

##### 1.4 DELIVERY, STORAGE, & HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name, applicable standard designation, and Manufacturer's name.
- B. Store material under roof and keep dry. Stack gypsum board flat and protect from damage.

##### 1.5 PROJECT/SITE CONDITIONS

- A. Environmental Requirements
  - 1. Temperature shall be 50 deg F minimum and 95 deg F maximum day and night during entire joint operation and until execution of Certificate of Substantial Completion.
  - 2. Provide ventilation to eliminate excessive moisture.
  - 3. Avoid hot air drafts which will cause too rapid drying.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Gypsum Board
  - 1. For all applications -
    - a. Any manufacturer's product meeting requirements of ASTM C 36, tapered edge, face paper suitable for painting.

## 2.2 ACCESSORIES

- A. Metal Accessories
  - 1. 26 gauge steel, electrolytic galvanized zinc-coated, treated for maximum cement and paint adhesion. Surfaces to receive bedding cement shall be knurled for maximum bonding.
    - a. Corner Beads - 1-1/8 inch leg minimum.
    - b. Casing - Channel type.
    - c. Furring Channels -
      - 1) Walls - Galvanized USG DWC-25
    - d. Resilient Channels - RC-1 by USG
    - e. Other accessories as required by Manufacturer's fire tests to provide necessary fire ratings.
- B. Joint Compound & Reinforcing
  - 1. Best grade or type recommended by Wallboard Manufacturer and meeting requirements of ASTM C 475.
  - 2. Use Taping Compound for first coat to embed tape and Finishing Compound for subsequent coats.
- C. Fasteners
  - 1. Bugle head screws meeting requirements of ASTM C 1002.
    - a. Types -
      - 1) Type W - For fastening gypsum board to wood members other than truss members and plywood web joists.
      - 2) Type S - For fastening gypsum board to steel framing members, truss members, and plywood web joists.
    - b. Lengths -
      - 1) Of length to penetrate wood framing 5/8 inch minimum.
      - 2) Of length to penetrate steel framing 3/8 inch minimum.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Interface With Other Work - Coordinate with Division 06 for location of backblocking for edges and ends of gypsum board and for blocking required for installation of equipment and building specialties. Do not install gypsum board until required blocking is in place.
- B. Fastening
  - 1. Apply from center of wallboard towards ends and edges.
  - 2. Apply screws 3/8 inch minimum from ends or edges, one inch maximum from edges, and 1/2 inch maximum from ends.
  - 3. Space screws not over 7 inches on center at edges where blocking or framing occurs. In panel field, space screws 7 inches on center.
  - 4. Set screw heads 1/32 inch below plane of board.
  - 5. Do not break face paper. If face is accidentally broken, apply additional screw 2 inches away.
  - 6. Screws on adjacent ends or edges shall be opposite each other.
  - 7. Drive screws with shank perpendicular to face of board.
- C. Single Layer Application
  - 1. Apply ceilings first using minimum of two men.
  - 2. Use board of length to give minimum number of joints.
  - 3. On walls over 9 feet high and on ceilings, apply board perpendicular to support.

4. Stagger end joints. End and edge joints of board applied on ceilings shall occur over framing members or be back blocked with 2x4 blocking. End joints of board horizontally applied on walls shall occur over framing members. Edge joints of board vertically applied on walls shall occur over framing members.
  5. Butt edges in moderate contact. Do not force in place. Shim to level.
  6. Leave facings true with joint, finishing flush. Vertical work shall be plumb and ceiling surfaces level.
  7. Scribe work closely. Keep joints as far from openings as possible. If joints occur near an opening, apply wallboard so vertical joints are centered over openings. No vertical joints shall occur within 8 inches of external corners or openings.
  8. Install board tight against support with joints even and true. Tighten loose screws.
  9. Calk perimeter joints in sound insulated rooms with specified acoustical sealant.
- D. Metal Trim
1. Corner Beads - Apply on outside corners with screws spaced 8 inches apart maximum.
  2. Trim - Apply where gypsum board abuts dissimilar material in accordance with Manufacturer's instructions. Hold metal trim back from exterior metal window & door frames 1/8 inch to allow for calking.
  3. Furring Channels - Apply with screws through flanges into each framing member.
- E. Finishing
1. General -
    - a. Tape and finish joints as specified below to correspond with final finish material to be applied to gypsum board. When sanding, do not raise nap of gypsum board face paper.
    - b. First Coat -
      - 1) Apply tape over center of joint in complete, uniform bed of taping compound.
      - 2) Completely fill gouges, dents, and fastener dimples.
      - 3) Allow to dry and sand lightly if necessary to eliminate high spots or excessive compound.
    - c. Second Coat -
      - 1) Apply coat of finishing compound over embedded tape extending 3-1/2 inches on both sides of joint center.
      - 2) Re-coat gouges, dents, and fastener dimples.
      - 3) Allow to dry and sand lightly to eliminate high spots or excessive compound.
    - d. Third Coat - Apply same as second coat except extend application 6 inches on both sides of joint center. Allow to dry and sand with fine sandpaper or wipe with damp sponge.
    - e. Fourth Coat - Apply same as second coat except extend application 9 inches on both sides of joint center. Allow to dry and sand with fine sandpaper or wipe with damp sponge.
    - f. Skim Coat - Apply thin layer of finishing compound to entire surface of panel and immediately shear excess compound, leaving thin film. Eliminate laps and tool marks with fine sandpaper or damp sponge.
  2. Finishing Levels -
    - a. Unfinished Gypsum Board Surfaces-
      - 1) GA-214-90 Level Two - "All joints and interior angles shall have tape embedded in joint compound and one separate coat of joint compound applied over all joints, angles, fastener heads, and accessories. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable," except under acoustic tile.
    - b. Painted Gypsum Board Surfaces in Storage, & Utility Areas -
      - 1) GA-214-90 Level Three - "All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. All joint compound shall be smooth and free of tool marks and ridges."
    - c. Painted Gypsum Board Surfaces, Except in Mechanical, Storage, & Utility Areas -
      - 1) GA-214-90 Level Five - "All joints and interior angles shall have tape embedded in joint compound and three separate coats of joint compound

applied over all joints, angles, fastener heads, and accessories. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges."

### **3.2 CLEANING**

- A. Remove from site debris resulting from work of this Section including taping compound spills.

END OF SECTION

## SECTION 09275

### GYPSUM BOARD TEXTURED FINISH

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install texturing on ceilings as described in Contract Documents.
- B. Related Sections
  - 1. Section 09 922 - Priming and finish painting

##### 1.2 SUBMITTALS

- A. Samples - Provide 2' x 2' control samples for Architect, three samples of each texture described by Architect showing possible variations.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Heavy Texture
  - 1. Approved Manufacturers -
    - a. Wall Spray-Spatter Knockdown (non-aggregate) by National Gypsum
    - b. Sheetrock Wall & Ceiling Spray Texture (Tuf Tex) by U S Gypsum
    - c. Equal as approved by Architect before bidding. See Section 01600.
- B. Light Texture
  - 1. Approved Manufacturers -
    - a. Wall Spray-Orange Peel (non-aggregate) by National Gypsum
    - b. USG Spray Texture Finish by U S Gypsum
    - c. Equal as approved by Architect before bidding. See Section 01600.

##### 2.2 APPROVED MANUFACTURERS

- A. National Gypsum, Charlotte, NC (800) 628-4625
- B. U S Gypsum Co, Chicago, IL (800) 964-4874
- C. Equal as approved by Architect prior to bidding. See Section 01600.

#### PART 3 EXECUTION

##### 3.1 APPLICATION

- A. After gypsum board is taped, sanded, and primed, apply texture in accordance with Manufacturer's directions. Closely match samples accepted by Architect.

END OF SECTION

## SECTION 09511

### ACOUSTICAL PANEL CEILINGS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install tile for suspended acoustical ceilings as described in Contract Documents.
- B. Related Sections
  - 1. Section 09130 - Acoustical Panel Suspension System

##### 1.2 SUBMITTALS

- A. See Section 01300.
- B. Product Data
  - 1. Manufacturer's literature
  - 2. Color and pattern selection

##### 1.3 DELIVERY, STORAGE, & HANDLING

- A. Store materials where protected from moisture and damage.
- B. Use no soiled, scratched, or broken material in the Work.

##### 1.4 MAINTENANCE

- A. Extra Materials - Provide Owner with one carton of each type of tile for future use.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Acoustic Panels
  - 1. Cast panels, core color to match surface color.
  - 2. Finish - Use tile from same color run in individual rooms to assure color match.
  - 3. Rating - Match UL fire-resistance classification of suspension system.
  - 4. Thickness - 3/4 inch minimum
  - 5. Approved Patterns & Manufacturers -
    - a. 9 Feet & Below -
      - 1) Natural Fissured by Celotex, Tampa, FL (813) 873-1700
      - 2) "F" Fissured by USG Interiors, Chicago, IL (800) 950-3839
    - b. Above 9 Feet -
      - 1) Texture-Tone by Celotex, Tampa, FL (813) 873-1700
      - 2) Glacier by USG Interiors, Chicago, IL (800) 950-3839

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Inspect for defects in support which are not acceptable. Report defects to Architect in writing. Do not install ceiling panels until defects in support are corrected.

### **3.2. INSTALLATION**

- A. Materials shall be dry and clean at time of application.
- B. Install lay-in panels in accordance with Manufacturer's instructions.

### **3.3 CLEANING**

- A. "Touch-up" minor abraded surfaces.
- B. Remove from site all debris connected with work of this Section.
- C. Remove and replace discolored tile to match adjacent tile.
- D. Remove and replace damaged or out-of-level tile at no additional cost to Owner.

END OF SECTION

## SECTION 09660

### RESILIENT TILE FLOORING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install resilient tile flooring as described in Contract Documents.

##### 1.2 SUBMITTALS

- A. See Section 01300.
- B. Product Data
  - 1. Manufacturer's literature or cut sheet on each component of system
  - 2. Maintenance instructions
  - 3. Color and style selection

##### 1.3 QUALITY ASSURANCE

- A. Environmental Conditions - Maintain 70 deg F minimum during application.

##### 1.4 MAINTENANCE

- A. Extra Materials - Leave box of 20 extra tile of each pattern and color used on Project with Owner.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Reinforced Vinyl Tile
  - 1. "Marbleized" or "Thru-chip" Pattern 1/8" by 12" by 12". Do not furnish tile which does not have its pattern and color extended continuously through entire thickness.
  - 2. Meet or exceed Fed Spec SS-T-312b, Type IV.
  - 3. Colors - To be selected by Architect.
  - 4. Approved Manufacturers -
    - a. Architectural Series by Kentile, Brooklyn, NY (908) 757-8953
    - b. "Vina-Lux" by Azrock Floor Products, San Antonio, TX (210) 558-6400
    - c. Vinyl Plastics Inc VPI, Sheboygan, WI (800) 874-4240
    - d. Equals as approved by Architect before bidding. See Section 01600.
- B. Adhesive - Water-resistant type. Best grade in accordance with Manufacturer's recommendations.
- C. Base - 2-1/2" by 2-1/2" by 1/8" aluminum angle in finish selected by Architect.
- D. Threshold Plate - 5 inches wide by 1/4 inch thick aluminum, fluted, slightly tapered both edges in finish selected by Architect.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Lay tile symmetrically about center line of spaces to insure even borders unless shown differently on Drawings.
- B. Install beveled edge stripping at terminal edges of tile except at ceramic tile, carpet, and where Drawings indicate different detail. Conceal edging strips beneath doors.

END OF SECTION

## SECTION 09 681

### FLOOR PREPARATION FOR CARPET INSTALLATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Prior to and during installation of carpet, prepare floor and maintain environmental conditions as described in Contract Documents.
  - 2. Perform minor alterations to building to accommodate carpet as described in Contract Documents.

##### 1.2 SUBMITTALS

- A. See Section 01 300.
- B. Product Data
  - 1. Manufacturer's literature and installation instructions for floor patching compound and latex underlayment.

##### 1.3 QUALITY ASSURANCE

- A. Pre-Installation Meeting
  - 1. See Section 01 200.
  - 2. Schedule meeting -
    - a. Prior to completing work of this Section.
    - b. 2 weeks minimum prior to carpet installation.
  - 3. Review condition of floor in regard to compliance with installation tolerances, required patching, cleanliness requirements, and other work necessary to prepare floors for installation of carpet.
  - 4. Review portions of building that are to be removed or altered to accommodate carpet installation.
- B. All work to be performed in compliance with SUU Facilities Management General Standards.

##### 1.4 PROJECT/SITE CONDITIONS

- A. Environmental Conditions
  - 1. Maintain 65 deg F minimum and 95 deg F maximum for 7 days prior to laying of carpet, continuously during installation period, and for 3 days after completion of installation.

#### PART 2 PRODUCTS

**Not Used**

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Verify existing conditions are ready for the installation of the carpet.

##### 3.2 PREPARATION

- A. Building Modifications
  - 1. If necessary, cut off doors in areas to receive new carpet so they clear carpet by 1/2

inch.

- B. Floor Preparation
  - 1. General -
    - a. Remove paint, sealer, grease, oil, silicone sealants, old carpet and adhesive, and other materials incompatible with carpet adhesive.
  - 2. Patch cracks, holes, and irregularities with specified material to provide a smooth, level surface.

### **3.3 FIELD QUALITY CONTROL**

- A. Testing
  - 1. Owner reserves right to field test floor preparation and reinstallation of furniture for specification compliance.

END OF SECTION

## **SECTION 09690**

### **CARPET TILE**

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Carpet tiles.
- B. Accessories.

##### **1.2 REFERENCES**

- A. ASTM D2859 - Test Method for Flammability of Finished Textile Floor Covering Materials.
- B. ASTM E84 - Surface Burning Characteristics of Building Materials.
- C. ASTM E648 - Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- D. NFPA 253 - Test for Critical Radiant Flux of Floor Covering Systems.
- E. Carpet tile to comply with SUU Facilities Management General Standards.

##### **1.3 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

##### **1.4 QUALIFICATIONS**

- A. Installer: Company specializing in performing the work of this Section with minimum 3 years documented experience.

##### **1.5 ENVIRONMENTAL REQUIREMENTS**

- A. Store materials for 3 days prior to installation in area of installation, to achieve temperature stability.
- B. Maintain minimum 70 degrees F (21 degrees C) ambient temperature three days prior to, during and 24 hours after installation materials.

##### **1.6 MAINTENANCE DATA**

- A. Submit under provisions of Section 01700.
- B. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

##### **1.7 EXTRA MATERIALS**

- A. Furnish under provisions of Section 01700.

- B. Provide 10 % of the total square footage of carpet tiles of each color and pattern selected.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS - CARPET TILE**

- A. As approved by SUU Facilities Management.

### **2.2 CARPET TILE**

- A. As approved by SUU Facilities Management.

### **2.3 ACCESSORIES**

- A. Sub-Floor Filler: type recommended by flooring material manufacturer.
- B. Primers and Adhesives: Recommended by carpet manufacturer.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that surfaces are smooth and flat with maximum variation of 1/4 inch in 10 ft, and are ready to receive work.

### **3.2 PREPARATION**

- A. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- C. Vacuum clean substrate.

### **3.3 INSTALLATION**

- A. Install carpet tile, accessories and adhesive in accordance with manufacturer's instructions.
- B. Integrate and blend carpet from different cartons to ensure minimal variation in color match.
- C. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- D. Locate change of color or pattern between rooms under door centerline.
- E. Place carpet tile dry over substrate.
- F. Extend carpet tile as base finish up vertical surfaces to form base. Terminate top of base with cap strip.

### **3.4 CLEANING**

- A. Clean work under provisions of 01700.

- B. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- C. Clean and vacuum carpet surfaces.

### 3.5 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01500.
- B. Do not permit traffic over unprotected floor surface.

END OF SECTION

## SECTION 09901

### GENERAL PAINTING REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Finishing elements of the building shown on Finish Schedule or specified below.
  - 2. Finish work to be installed under Section 06201. Back prime work to be installed against concrete or masonry or subjected to moisture.

##### 1.2 SUBMITTALS

- A. See Section 01300.
- B. Product Data
  - 1. Submit Manufacturer's literature marked to indicated primer and finish coat products to be used. Provide Manufacturer's cut sheets for each primer and finish coat which indicate paint components and percentages.
  - 2. Maintenance instructions
  - 3. Color schedule
  - 4. Maintain copy of submission on Project site.
- C. Samples - Provide paint card for each color and for each paint system. Card to show each component of system as well as total system.

##### 1.3 QUALITY ASSURANCE

- A. Field Samples
  - 1. Before application of any paint system, if required by Architect, meet on Project site with Architect, Owner's representative, and Manufacturer's representative. Architect may select one surface for application of each paint system specified.
  - 2. Apply paint systems to surfaces indicated by Architect following procedures outlined in Contract Documents and Product Data submission specified above.
  - 3. After approval of samples, proceed with application of paint system throughout Project.
- B. Pre-Installation Meeting
  - 1. See Section 01200.
  - 2. Schedule meeting after delivery of paint but prior to application of field samples or paint.

##### 1.4 DELIVERY, STORAGE, & HANDLING

- A. Deliver specified products in original containers with labels intact on each container. Deliver amount of material indicated on submittal for Project in single shipment. Notify Architect two working days prior to delivery of paint.
- B. Store materials in single place.
- C. Keep storage area clean and rectify any damage to area at completion of work of this Section.

##### 1.5 PROJECT/SITE CONDITIONS

- A. Environmental Conditions
  - 1. Maintain temperature of paint storage area at 55 deg F minimum.
  - 2. Perform painting operations at temperature conditions recommended by Manufacturer for each operation.

## **1.6 SCHEDULING**

- A. Coordinate with other Sections for work that requires painting prior to installation.
- B. Examine Contract Documents for painting requirements of other trades. Become familiar with their painting provisions and the painting of finish surfaces left unfinished by the requirements of other Sections.

## **1.7 MAINTENANCE**

- A. Extra Materials - Provide one quart of each finish coat material in Manufacturer's original container in each color used.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Linseed oil, shellac, turpentine, and other painting materials shall be pure, of highest quality, and bear identifying labels on containers.
- B. Paint compositions shall not only meet specified requirements but also contain sufficient miscellaneous components to promote proper drying and performance during and after application.

### **2.2 APPROVED MANUFACTURERS**

- A. Benjamin Moore, Montvale, NJ (800) 445-3671
- B. Devoe & Reynolds, Louisville, KY (800) 654-2616
- C. Fuller O'Brien, South San Francisco, CA (800) 546-1112 ext 3128
- D. Guardsman, Seattle, WA (800) 325-3904
- E. Lilly, Indianapolis, IN (317) 687-6705
- F. Pittsburgh Paints, Pittsburgh, PA (800) 441-9695
- G. Pratt & Lambert, Marysville, CA (800) 289-7728
- H. Sherwin-Williams, Cleveland, OH (800) 321-8194
- I. United Gilsonite Laboratories, Scranton, PA (717) 344-1202
- J. Wm. Zinsser & Co, Somerset, NJ (908) 469-8100

## **PART 3 EXECUTION**

### **3.1 ACCEPTABLE APPLICATORS**

- A. Applicator shall have experience in application of specified products for five years minimum and be acceptable to Architect and Manufacturer.

### **3.2 PREPARATION**

- A. Protection
  - 1. Remove all oily rags and waste from building each night. Take every precaution to avoid danger of fire.
  - 2. Protect finish work and adjacent materials during painting. Do not splatter, drip, or paint surfaces not intended to be painted. These items will not be spelled out in detail but pay special attention to the following -
    - a. Do not paint finish copper, bronze, chromium plate, nickel, stainless steel, anodized aluminum, or monel metal except as explicitly specified.
    - b. Keep cones of ceiling speakers completely free of paint. If it is required that metal speaker grilles are to be painted, paint prior to mounting grilles to speakers. Mask off metal grilles installed on ceiling speakers if ceiling is being spray painted.

- B. Surface Preparation
  - 1. Surfaces to be painted shall be clean and free of loose dirt. Clean and dust surfaces before painting or finishing.
  - 2. Do no exterior painting while surface is damp, unless recommended by Manufacturer, nor during rainy or frosty weather. Interior surfaces shall be dry before painting.
  - 3. Wash metal surfaces with mineral spirits to remove dirt and grease before applying materials. Where rust or scale is present, use wire brush or sandpaper to clean before painting. Clean shop coats of paint that have become marred and touch up with proper type primer.
  - 4. Treat galvanized metal and zinc surfaces as specified and in accordance with Manufacturer's directions before applying first paint coat.
  - 5. Sand woodwork smooth with 220 sandpaper and clean surfaces before proceeding with stain or first coat application.
  - 6. Fill holes and cracks in surfaces to receive paint or stain.

### **3.3 APPLICATION**

- A. Carefully follow Specifications and color schedule, painting complete all surfaces to be painted.
- B. Tint priming coat and undercoat to approximate shade of final coat, but with enough difference so it is possible to check application of specified number of coats.
- C. Spread materials smoothly and evenly.
- D. Putty nail holes in wood after application of first finish coat using natural colored type to match wood finish. Bring putty flush with adjoining surfaces.
- E. Touch up suction spots after application of first coat.
- F. Paint shall be thoroughly dry and surfaces clean before applying succeeding coats.
- G. Use fine sandpaper between coats as necessary to produce even, smooth surfaces.
- H. Make edges of paint adjoining other materials or colors clean, sharp, and without overlapping.
- I. Finished work shall be uniform, of approved color, smooth, and free from runs, sags, defective brushing, rolling, clogging, and excessive flooding.

### **3.4 ADJUSTMENT**

- A. At completion of Project, touch up work to match specified finish. Repaint areas damaged during construction with specified finish at no additional cost to Owner.

### **3.5 CLEANING**

- A. Do not discard paint containers without Architect's written approval to allow count to determine if paint delivered was applied.
- B. Upon completion of work of this Section, remove paint spots from floors, walls, glass, or other surfaces and leave work clean, orderly, and in acceptable condition. Remove debris caused by work of this Section from premises.

END OF SECTION

## SECTION 09922

### PAINT ON INTERIOR GYPSUM WALLBOARD

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Preparing, priming, and finish painting new interior gypsum wallboard surfaces as described in Contract Documents.
- B. Related Sections
  - 1. Section 09901 - General Painting Requirements

##### 1.2 SEQUENCING

- A. Properly clean and paint light cove interiors before installation of light fixtures.

#### PART 2 PRODUCTS

##### 2.1 APPROVED MANUFACTURERS

- A. Wallboard
  - 1. Benjamin Moore -
    - a. First Coat - Latex Quick Dry Prime Seal 201
    - b. Second & Third Coats - Regal Aquaglo 333
  - 2. Devco -
    - a. First Coat - 50801 Interior Latex Primer-Sealer
    - b. Second & Third Coats - 525XX Mirrolac Water-borne Semi-Gloss
  - 3. Fuller O'Brien -
    - a. First Coat - 220-22 PVA Primer
    - b. Second & Third Coats - 214-XX Latex Semi-Gloss Enamel
  - 4. Pittsburgh Paints -
    - a. First Coat - 6-2 SpeedHide Quick Dry Primer
    - b. Second & Third Coats - 6-510 Interior High Lustre S/G
  - 5. Pratt & Lambert -
    - a. First Coat - Z-96 Wall Primer
    - b. Second & Third Coats - Aqua-Satin Latex Enamel
  - 6. Sherwin-Williams -
    - a. First Coat - ProMar 200 Latex Primer B28 W200
    - b. Second & Third Coats - ProMar 200 Latex Semi-Gloss
- B. Paint Colors
  - 1. As identified in the construction drawings.

#### PART 3 EXECUTION

##### 3.1 APPLICATION

- A. Interface With Other Work.
- B. New Work
  - 1. See appropriate paragraphs of Section 09901.
  - 2. Primer -
    - a. Apply primer to be covered with paint coats with roller only, or with spray gun and back-rolled.
- C. Existing Work
  - 1. Clean surface with soft cloth dampened with thinner.

2. Spackle and tape cracks. Sand to smooth finish.
3. Sand or chemically etch as required to prepare surface to accept new paint.
4. Clean surface with soft cloth dampened with thinner.
5. Prime.
6. Apply finish coats.

END OF SECTION

## SECTION 09 936

### CLEAR FINISH ON INTERIOR HARDWOOD

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Includes But Not Limited To
  - 1. Preparing and finishing of new interior clear finished hardwood as described in Contract Documents.
- B. Related Sections
  - 1. Section 09 901 - General Painting Requirements
  - 2. Division 08 - Factory finished flush wood doors.

##### 1.2 QUALITY ASSURANCE

- A. Field Samples
  - 1. Prior to performing work of this Section, prepare control sample, to match sample available from Architect, to be used as finishing standard for interior clear finished hardwood.
  - 2. Finish applicator shall attend progress meeting held prior to preparation of control sample. Architect will review requirements to insure that control sample will be prepared using specified products and procedures.
  - 3. Control sample shall consist of standard flush door intended for installation in Project.
  - 4. Architect will inspect control sample at progress meeting following preparation of control sample. When sample is approved, work of this Section may proceed.

#### PART 2 PRODUCTS

##### 2.1 APPROVED MANUFACTURERS

- A. Dye / Stain
  - 1. As approved by SUU Facilities Management.
- B. Finish Coats - clear
  - 1. Devoe -
    - a. First Coat - 59120 Vinyl Sealer
    - b. Second & Third Coats - 591XX Pre-Catalyzed Lacquer
  - 2. Guardsman -
    - a. First Coat - 14-7074 Pre-Catalyzed Lacquer Sealer
    - b. Second & Third Coats - 14-7075 Pre-Catalyzed Lacquer
  - 3. Lilly -
    - a. First, Second, & Third Coats - 20 Sheen Pre-Catalyzed Lacquer 587E208
  - 4. Reliance -
    - a. First Coat - 421-CO2O-99 Non-Stearated Sanding Sealer
    - b. Second & Third Coats - 33035FO20 Pre-Catalyzed Lacquer
  - 5. Pratt & Lambert / M.L.Campbell
    - a. First Coat - C101-83 Vinyl Sealer
    - b. Second & Third Coats - C112-204 Pre-Catalyzed Lacquer.
  - 6. Sherwin-Williams -
    - a. First Coat - T67F3 Vinyl Sealer
    - b. Second & Third Coats - T77F33 D.R.E. Catalyzed Lacquer. Catalyst to be added by supplier.

#### PART 3 EXECUTION

### 3.1 APPLICATION

#### A. New Work

1. See appropriate paragraphs of Section 09 901.
2. Surfaces shall be clean and dry.
3. Sand entire surface item to be finished lightly with 120 to 150 non-steared sandpaper and clean before applying dye or stain.
4. Apply dye/stain in accordance with Manufacturer's recommendations and as necessary to attain correct color.
5. Scuff sand with 220 steared sandpaper between application of first and second coats.
6. Make certain surfaces are dry before applying next coat.
7. Where backpriming is required, apply one coat of finish material.
9. Finishing of Door Surfaces, Including Edges, Faces, Tops, & Bottoms -
  - a. Apply finish as soon as door is fitted. Finish tops, bottoms, and edges before faces. Finish and refinish doors with no hardware applied to doors.

END OF SECTION

## SECTION 10160

### METAL TOILET COMPARTMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Products Supplied But Not Installed Under This Section
  - 1. Metal toilet compartments
- B. Related Sections
  - 1. Division 06 -
    - a. Blocking for compartment installation and door bumper
    - b. Installation
  - 2. Section 10810 - Toilet Accessories

##### 1.2 REFERENCES

- A. American Society For Testing And Materials
  - 1. ASTM B 86-89, "Specifications for Zinc-Alloy Die Castings"

##### 1.3 SUBMITTALS

- A. See Section 01300.
- B. Product Data
  - 1. Manufacturer's literature or cut sheet
  - 2. Color selection

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURED UNITS

- A. Toilet & Miscellaneous Partitions
  - 1. Floor-mounted, overhead-braced.
  - 2. Panels -
    - a. Core type, galvanized bonderized steel sheets (minimum 0.00015 inch zinc coating), edges bound interlocked with drawn molding welded on corners.
      - 1) Panels, Pilasters, & Screens - 20 gauge minimum
      - 2) Doors - 22 gauge minimum
    - b. Anchors - Non-corrosive.
  - 3. Posts & Headrails - 20 gauge minimum of same construction and finish as panels. One per stall.
  - 4. Plinths - Stainless Steel.
  - 5. Hardware -
    - a. Each Door -
      - 1) Gravity type hinges with double handed, nylon bottom cam, adjustable for door closing position, bottom hinge finished flush with door bottom.
      - 2) Sliding door bolt.
      - 3) Door strike and keeper with rubber bumper.
      - 4) Coat hook/door bumper.
    - b. Finish - US 26.
    - c. Meet requirements of ASTM B 86, Alloy AG 40A.
- B. Urinal Partition - Basic construction same as panels above, floor mounted. Minimum width shall be 16 inches.

- C. Finish - Baked enamel, colors selected from Manufacturer's standard colors by Architect.

## **2.2 APPROVED MANUFACTURERS**

- A. Accurate Partitions Inc, Lyons, IL (708) 442-6801
- B. AAMCO - All American Metal Corp, Freeport, NY (516) 623-0222
- C. Flush-Metal Partition Corp, Maspeth, NY (718) 784-3380
- D. General Partitions, Erie, PA (814) 833-1154
- E. Global Steel Products Corp, Deer Park, NY (516) 586-3330
- F. Hadrian Inc, Mentor, OH (216) 974-7120
- G. Knickerbocker Partitions Corp, Freeport, NY (516) 546-0550
- H. Metpar, Westbury, NY (516) 333-2600
- I. Sanymetal, Somerset, KY (606) 678-2700
- J. Or approved equal.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install pilasters rigid, plumb, and level. Anchor pilaster to floor with 3/8 inch minimum threaded studs in expansion shields embedded 2 inches into concrete slab below setting bed.
- B. Secure panels to walls with two stirrup brackets minimum attached near top and bottom of each panel. Use fasteners of length to provide one inch embedment into blocking or masonry.
- C. Secure overhead brace to face sheets with two fasteners minimum per face. Set door tops parallel with brace. Set door bottom 12 inches above floor.
- D. Plinth to be level with and snug to floor.

### **3.2 ADJUSTING**

- A. Lubricate hardware as recommended by Manufacturer.
- B. Set hinges on out-swinging doors to return to fully closed position.
- C. Perform final adjustments to pilaster leveling devices, door hardware, and other operating parts of partition assembly just before Substantial Completion.

### **3.3 CLEANING**

- A. Remove protective masking. Clean exposed surfaces of partitions, hardware, fittings, and accessories.
- B. Touch-up minor scratches and other finish imperfections using materials and methods recommended by Manufacturer. Replace damaged or severely scratched materials with new materials.

END OF SECTION

## SECTION 10810

### TOILET ACCESSORIES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Products Supplied But Not Installed Under This Section
  - 1. Accessories for Rest Rooms
- B. Related Sections
  - 1. Division 06 -
    - a. Installation
    - b. Blocking
  - 2. Soap dispensers and paper towel dispensers to match existing units per SUU Facilities Management.

##### 1.2 SUBMITTALS

- A. See Section 01300.
- B. Product Data - Manufacturer's literature or cut sheets
- C. Shop Drawings - Submit schedule showing items used, location where installed, and proper attaching devices for substrate.

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURED UNITS

- A. Rest Rooms
  - 1. Toilet Tissue Dispensers, Sanitary Napkin Disposal Container, Single Robe Hook with Exposed Fasteners, Mirrors, and Grab Bars as identified in the construction documents.
  - 2. Or approved equal.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Install items in accordance with Manufacturer's instructions. Provide mounting devices proper for base structure.
- B. Where possible, mount like items in adjoining compartments back-to-back on same partition.
- C. Locate as follows
  - 1. Toilet Tissue Dispenser - One at each water closet.
  - 2. Sanitary Napkin Disposal Containers - One at each water closet in Women's Rest Rooms and unisex handicapped Rest Rooms.
  - 3. Robe Hook -
    - a. One on partition panel or building wall, depending on compartment configuration, within one foot of compartment door jamb and at same height as compartment latch in handicap stalls.
    - a. One on building wall within one foot of door jamb and at same height as door lockset in Women's Handicap Rest Room.

END OF SECTION

## SECTION 11 200

### PANEL-LINED FLOOR-MOUNTED FUME HOOD

#### PART 1 - GENERAL

##### 1.01 Scope and Classification:

1.01.01 This specification covers the requirements for the purchase of floor-mounted panel-lined laboratory fume hoods for remote exhaust blower systems. It is written to cover the by-pass design configuration, vapor-proof and explosion-proof electrical configurations and service fixture configurations that are available on these hoods.

1.01.02. Floor-mounted laboratory fume hood in 5 foot width and internal depth of 36".

1.01.03. This specification sets the intent for quality, performance and appearance.

##### 1.02 Requirements:

1.02.01 Laboratory hoods shall be of double wall construction with epoxy-coated, cold rolled steel exterior and 3/16" sheet molded composite board internal liner and baffle. The 5 foot hood shall have two 3/16" thick vertical-rising sashes with PVC sash handles. Viewing height shall be 68.15". Access for maintenance shall be from both the front and interior sides of the hood. All hood-mounted service fixtures, where provided, shall be pre-plumbed except for the inlet tubing. All electrical services shall be pre-wired to a single point internal junction box at the top right of the hood. Hoods shall be shipped in two sections, top and bottom. Hoods with 30" internal depths and no service fixtures shall pass through a 40" opening without disassembly.

##### 1.03 Quality Assurance:

1.03.01 The hood manufacturer shall maintain a testing facility at its place of business for the testing of floor-mounted laboratory hoods in accordance with ASHRAE Standard 110-95. Both hoods and installation shall be in conformance to good construction practice and approved by the owner/user. Only hood manufacturers who have had fume hoods as a principal product for ten years will be considered. The hood manufacturer's manufacturing and test facilities and its quality control procedures must be available for owner/user inspection.

##### 1.04 References:

1.04.01 The laboratory hoods shall conform to the following regulations and standards:

SEFA - #1 (Laboratory Fume Hoods)

NFPA - #45 (Fire Protection for Laboratories Using Chemicals 2000) section 6-1 through 6-14

ASTM-E-84 - Surface Burning Characteristics of Building Materials

ASHRAE - 110-95 (Method of Testing Performance of Laboratory Fume Hoods)

ANSI - Std. Z 9.5 (Laboratory Ventilation)

UL Standard 3101 (Electrical Wiring)

UL-1805 (Hood Construction)

CAN/CSA Standard C22.2 No. 1010.1

##### 1.05 Submittals:

1.05.01 Laboratory hood specification sheets and product manuals shall be submitted by the hood manufacturer upon request. The hood supplier shall submit shop drawings when necessary for clarification.

1.05.02 Sample pieces of the hood exterior wall material, interior liner and baffle material, epoxy floor material, and color selection chips shall be available from the hood manufacturer upon request.

1.06 Delivery and Storage:

1.06.01 Laboratory hoods and work surfaces shall be delivered adequately protected from damage during shipment.

1.07 Warranty:

1.07.01 Manufacturer's warranty against defects in material or workmanship on its fume hoods shall be for 1 year from date of installation or 2 years from date of purchase, whichever is sooner, shall include replacement of parts (except lamps) and labor.

## **PART 2 - PRODUCTS**

2.01 Acceptable Manufacturer:

2.01.01 Labconco Corporation, 8811 Prospect Avenue, Kansas City, Missouri 64132, Protector XL Laboratory Hoods, model numbers as follows:

Hood with Vertical-Rising Sashes - 5' Model

2.01.02 Or approved equal.

2.02 Materials:

2.02.01 Hood exterior construction shall be 20 gauge (or heavier) cold rolled sheet steel or galvanized steel supports. All exterior painted surfaces shall be baked on dry powder epoxy applied electrostatically. Base metal material shall be properly prepared for epoxy coating.

2.02.02 Hood interior liner and baffles shall be sheet molded homogenous polyester panels. Baffles shall include chemically resistant polyester brackets for support. Minimum thickness shall be 3/16". Flame spread shall be less than 25 per ASTM E-84.

2.02.03 Corner posts shall be 16 gauge cold-rolled steel with epoxy-coated finish. Both corner posts shall be pre-punched and plugged to accommodate up to 4 service fixtures and 2 electrical receptacle boxes on each side. Right-hand corner post shall have ADA-compliant light and blower switches.

2.02.04 Exhaust connection shall be epoxy-coated 316 stainless steel.

2.02.05 Hood rear exterior finish panel shall be optional (consult Labconco).

2.02.06 Hose connectors shall be chemical-resistant, glass-filled polypropylene with 6 serrations.

2.02.07 Hood sashes shall be 3/16" thick tempered safety glass surrounded by a PVC frame.

2.02.08 The sash tracks shall be epoxy-coated steel.

2.02.9 Hood service fixtures (on models with service fixtures) shall feature 1/4" copper tubing with extruded brass valve and rotating seat, TFE coated silicone bronze stem and TFE packing. Gas valves shall feature brass service lines. Service fixtures shall not include inlet tubing.

2.03 Specific Fabrication Requirements:

2.03.01 Overall exterior dimensional information is as follows:

#### NOMINAL DIMENSIONS OF HOODS WITH 36" INTERIOR DEPTH

5 ft. 60" w x 95" h x 45.2" d

2.03.02 The floor-mounted laboratory hood with by-pass design shall minimize face velocity fluctuations as the sash is closed or opened. With the sash closed to a six inch opening, the average inflow velocity shall be not less than twice the selected full open face velocity nor greater than three times that amount.

2.03.03 Exhaust air volume requirements and static pressure losses shall be as described in the table.

2.03.04 The exhaust connection shall be 12.81" I.D The 5 foot hood shall have one exhaust connection.

2.03.05 Interchangeable lift-away side panels and removable front panels shall provide access to plumbing fixtures, electrical wiring, counterbalance sash weights, and lighting fixtures, where specified on the individual hoods. All services shall be accessible from the front of the hood. Interior access panels, two on each side, shall provide additional access.

2.03.06 The exterior of the hood shall feature baked on powder epoxy paint applied electrostatically.

2.03.07 The interior liner and baffles shall be cut to fit in terms of size and securely held in place with supports. The baffles shall provide uniform draw throughout the fume cavity. Baffles shall be removable for cleaning.

2.03.08 The 5 foot hood shall have dual vertical-rising sashes counterbalanced by single weights suspended by two vinyl-coated stainless steel cables that pass through ball bearing pulleys. All sashes shall be framed with extruded epoxy-coated aluminum or PVC.

2.03.09 The hoods shall be equipped without service fixtures or shall be provided with a total of up to 8 service fixtures as required capable of providing hot and cold tap water (flow rate 3.5 GPM or 13.25 LPM at 67 psi at full open, 3.5 turns), natural gas (theoretical flow rate of 71CFM at 100 psi, provides 1095 BTU/Sec at a density of .667 Lbs/CU. FT.), air (theoretical flow rate of 59 CFM at 100psi). Fixtures are rated at maximum pressure of 200 psi with a working pressure of 125 psi. Coefficient of flow for the valve, Cv=0.43. Services shall be provided through remote-controlled valves and 6-serration hose connectors located inside the fume hood cavity. Services shall be pre-plumbed except for the inlet tubing using 1/4" copper tubing except for the upper right hand fixture shall be 1/4" brass for use with gas. Fixture handles shall be plastic and color coded as well as labeled for the designated type of service. Specialty service fixtures are available upon request including CW gooseneck with and without, as required, vacuum breaker (3/8" lines) and SST valves with 1/4" SST lines for purified water. Other service fixtures shall be available from various valve manufacturers (consult Labconco).

### **PART 3 - EXECUTION**

3.01 Examination:

3.01.01 Verify equipment rough-in before proceeding with work.

3.01.02 Coordinate with other trades for the proper and correct installation of plumbing and electrical rough-in and for rough opening dimensions required for the installation of the hood.

3.02 Installation:

3.02.01 Install according to manufacturer's instructions.

3.02.02 Install according to standards required by authority having jurisdiction.

3.02.03 Install equipment plumb, square and straight with no distortion and securely anchor as required.

3.02.04 Sequence installations to ensure utility connections are achieved in an orderly and expeditious manner.

3.02.05 Touch up minor damaged surfaces caused by installation. Replace damaged components as directed by Architect.

3.03 Adjusting

3.03.01 Adjust operating equipment, with exception of air moving equipment, to efficient operation for its intended use, and as required by the manufacturer.

3.04 Cleaning

3.04.01 Clean equipment, casework, countertops and all other surfaces as recommended by the manufacturer, rendering all work in a new and unused appearance.

3.04.02 Clean adjacent construction and surfaces that may have been soiled in the course of installation of work in this section.

3.05 Protection of Finished Work:

3.05.01 Provide all necessary protective measures to prevent exposure of equipment and surfaces from exposure to other construction activity.

3.05.02 Advise contractor of procedures and precautions for protection of material and installed equipment and casework from damage by work of other trades.

3.06 Demonstration:

3.06.01 Provide systems demonstration and demonstrate all equipment operations and functions.

## SECTION 12305

### MANUFACTURED CASEWORK

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Products Supplied But Not Installed Under This Section
  - 1. Cabinetry in Lab.
- B. Related Sections
  - 1. Division 06 - Installation
  - 2. Division 15 - Plumbing fixtures and connections

##### 1.2 REFERENCES

- A. American National Standards Institute
  - 1. ANSI A161.2-1979 (R1987), "Performance Standards for Fabricated High Pressure Decorative Laminate Countertops"
- B. National Electrical Manufacturer's Association
  - 1. NEMA LD 3-1991, "High Pressure Decorative Laminates"

##### 1.3 SUBMITTALS

- A. See Section 01300.
- B. Product Data - Manufacturer's literature

#### PART 2 PRODUCTS

##### 2.1 COMPONENTS

- A. Cabinets
  - 1. As identified in the construction drawings.
  - 2. Or approved equal.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Install in accordance with Manufacturer's directions.

END OF SECTION

## SECTION 15000

### GENERAL REQUIREMENTS FOR AIR CONDITIONING, & PLUMBING

#### 1. GENERAL

1..1 The General Notes on the drawings are applicable to these specifications and shall form a part of the contract(s). In addition, work in this section is governed by the provisions of the Bidding Requirements, contract forms, General Conditions, and all sections under General Conditions.

#### 2. CODES

2..1 The work shall comply with all applicable codes, rules and regulations and with all building and safety laws relating to public health and safety.

2..2 All materials and equipment shall conform to the current Construction, Mechanical, Plumbing, Electrical and Fire Codes.

2..3 Removal, replacement and installation procedures, methods and conditions shall comply with the latest OSHA and EPA regulations.

#### 3. PERMITS AND FEES

3..1 Obtain and pay for all required permits, fees and licenses except as otherwise furnished by the Owner.

#### 4. EXAMINATION OF PREMISES

4..1 Before submitting a proposal for his work, each bidder shall be held to have examined the construction drawings and the premises, verified all measurements, and satisfied himself as to the existing conditions under which he will be required to perform his work. No allowance will be made subsequently in this respect.

#### 5. COOPERATIVE WORK

5..1 Correct without charge any work requiring alteration due to lack of proper supervision or failure to make proper provision in time. Correct without charge any damage to adjacent work caused by the alteration. See Division 1 for additional requirements.

5..2 Cooperative Work Includes: General supervision and responsibility for proper location, rough-in and size of work related to Division 15 but provided under other divisions of these specifications.

#### 6. VERIFICATION OF DIMENSIONS

6..1 Scaled and figured dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions at site, and be responsible for properly fitting equipment and materials together and to the structure in spaces provided.

6..2 Drawings are essentially diagrammatic and many offsets, bends, special fittings and exact locations are not indicated. Carefully study drawings and premises in order to determine best methods, exact locations, routes, building obstructions, and install apparatus and equipment in available locations. Install apparatus and equipment in manner and in locations to avoid obstructions, preserve headroom, and keep openings and passageways clear.

#### 7. WORK IN EXISTING AREAS

7..1 Under these sections of the specifications, furnish all labor, materials and equipment required to remove the air conditioning and plumbing systems in existing areas as herein described and as indicated on the drawings.

## 8. POTENTIAL HEALTH HAZARDS

8..1 The Contractor(s), while performing renovation/remodeling/demolition work on this project, shall at all times be on the alert for products or materials in the existing structure which may contain asbestos and, if encountered, shall immediately notify the Owner of his findings. No further work shall be done in the immediate area in question until such time as directed by the Owner.

8..2 Any sampling and/or laboratory analyses deemed necessary for positive identification of asbestos content will be arranged by and paid for by the Owner.

8..3 When such samplings or analyses confirm the presence of asbestos, the Owner will contract with a separate party for the removal of contaminated products and materials.

8..4 After contaminated products and materials have been removed, the Contractor shall, upon direction by the Owner, furnish and install new products and materials to replace those which have been removed.

8..5 The Contractor will be reimbursed for such work and materials in accordance with change order procedure outlined in the General Conditions.

## 9. UTILITIES SHUTDOWNS

9..1 No utilities (public or private), electrical, mechanical or piping systems shall be cut, abandoned, shut off or otherwise interrupted until approved by plant services.. All shutdowns of systems required to connect, reconnect, move, relocate or otherwise terminate connections shall be done at predetermined hours as directed by Plant Services.

9..2 Notification of any and all utility shutdowns shall be made in writing to Plant Services four (4) days in advance of any and all proposed shutdowns. No shutdowns may be made without the approval of Plant Services.

## 10. CUTTING

10..1 Cutting of or into existing building surfaces shall be done as neatly and quietly as possible to minimize dust and noise pollution of existing staff areas. All cutting of existing building surfaces shall be done at predetermined hours as directed by Plant Services. No structural walls or members shall be cut without written approval of the Architect. Cutting shall be done in a manner as directed and approved by the Architect.

## 11. SHOP DRAWINGS

11..1 Submit shop drawings and all data in accordance with the Special Conditions for all equipment provided under these division(s).

11..2 Submittals shall be suitably bound with hard covers. Submittals shall be indexed and shall contain complete engineering data on all items being submitted for review.

## 12. DRAWINGS OF RECORD

12..1 Provide "record drawings" in conformance with the General Conditions.

### 13. EQUIPMENT DESIGN AND INSTALLATION

13..1 Uniformity: Unless otherwise specified, provide all equipment of same type or classification by the same manufacturer.

13..2 Application: Do not install any equipment in an application not recommended by the manufacturer.

13..3 Design: Design all equipment in accordance with ASME, AGA, UL and other applicable technical standards.

13..4 Installation: Align, level and adjust all equipment for proper operation. Install so connecting and disconnecting of piping of accessories can readily be done, and so all parts are readily accessible for inspection, service and repair. Install equipment in accordance with manufacturer's recommendations.

### 14. CLOSING-IN OF UNFINISHED WORK

14..1 Cover no work until inspected, tested and approved. Where work is covered before inspection and test, uncover it and when inspected, tested and approved, restore all work to original, proper condition.

### 15. SLEEVES AND PLATES

15..1 Provide sleeves for all piping passing through concrete floor slabs and concrete, masonry, tile and gypsum wall construction.

15..2 Where sleeves are placed in exterior walls below grade and slabs on grade, the space between the pipe and the sleeves shall be packed with waterproof sealant. Spaces above grade shall be packed with fiberglass. Exception: Use fireproof packing at all floor openings not in utility chase.

15..3 Provide escutcheon plates for exposed pipes passing through walls, floors, and ceilings. Where plates are provided for pipes passing through sleeves which extend above surface, provide deep recessed plates to conceal the pipe sleeves.

### 16. WATERPROOFING

16..1 Where any work pierces waterproofing, including waterproof concrete, the method of installation shall be as approved by the Architect before work is done. Contractor shall furnish all necessary sleeves, caulking and flashing to make openings absolutely watertight. All ductwork exposed on roof shall have joints sealed with waterproof mastic.

### 17. ACCESSIBILITY

17..1 Where equipment requiring service is concealed behind non-accessible architectural surfaces, provide the general work contractor the exact location and size of access panels required.

17..2 Access panels shall be furnished under this section and shall be Milcor flush panel access doors with concealed hinge, prime coat finish, flush screwdriver operated locks, and frame style to suit construction in which doors are installed. Size shall be adequate for work and service requirements.

17..3 Provide doors which pierce a fire separation with same fire rating as the separation.

### 18. DIVISION OF WORK

18..1 All control wiring 100 volts and lower shall be furnished and installed by Control Contractor. All power wiring 110 volts and above, except as otherwise indicated or noted herein, is included in electrical section of these specifications.

19.1.1 All control wiring shall be installed in conduit.

18..2 All motor starters and controls specified to be incorporated in a motor control center are to be furnished and installed under the electrical section of the specifications.

18..3 All motors, individually mounted starters and variable speed controllers shall be furnished under these portions of the work to be installed under the electrical section of the specifications.

18..4 All control devices for equipment furnished under these section(s) are to be furnished under that particular section and installed under the electrical section.

18..5 Under these section(s) provide all shop drawings and wiring diagrams to the Electrical Contractor and the Architect complete with all connection details. Wiring diagrams must be free from confusing optional methods that do not apply. Wiring diagrams must be complete with all necessary information and must correctly indicate the conditions of this specific job.

18..6 Under these section(s) the Contractor(s) must be responsible for the checking and testing of all controls and interlocks for a complete and satisfactory operating system. Additional wiring and devices required for proper operation shall be furnished and installed where required.

18..7 Before ordering any motors, starters, and equipment, verify the available voltage and phase for all motors with the Electrical Contractor, and all requirements for motor starters, including all extra contacts, H.O.A. switches, control transformers, etc.

18..8 All field wiring and equipment must conform to the applicable sections of the electrical specifications.

## 19. EQUIPMENT ROUGH-IN

19..1 Rough-in all equipment and fixtures as designated on the drawings and in the specifications. The drawings indicate only the approximate location of rough-ins. The Contractor shall obtain all certified rough-in information before progressing with any work for rough-in or final connections. Rough-in for existing equipment to be relocated shall be verified, by the Contractor under this section at the job site.

## 20. EQUIPMENT FINAL CONNECTIONS

20..1 Provide final connections complete with necessary valves, drains, unions, flanges, and duct connections for all equipment furnished and installed under other sections of the specifications (except as otherwise designated).

## 21. EQUIPMENT LIST AND MAINTENANCE MANUAL

21..1 Prior to completion of the job, the Contractor shall compile a complete equipment list and maintenance manual. The equipment list shall include the following items for every piece of material equipment supplied under this section of the specification.

21..1.1 Name, model and manufacturer.

21..1.2 Complete parts drawing and list.

21..1.3 Local supply for parts and replacement and telephone number.

21..1.4 Local service organization for equipment and telephone number.

21..1.5 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.

21..2 Maintenance manual shall be suitably bound with hard covers and shall include all available manufacturers' operation and maintenance instructions, together with diagrams and instructions necessary to properly operate and maintain the equipment. The equipment list and maintenance manual shall be submitted in duplicate to the Engineer for approval not less than ten (10) days prior to the completion of the job. The maintenance manual shall also include the name, address and phone number of the General Contractor and all subcontractors involved in any of the work specified herein. The maintenance manual shall be finally provided in four copies.

21..2.1 All control diagrams.

## 22. DAMAGE TO EXISTING EQUIPMENT

22..1 All existing ductwork, piping, conduit, duct insulation, pipe insulation, etc., caused to be damaged by work performed under these sections shall be repaired or replaced by the Contractor(s) causing such damage. All repairs and/or replacement shall be made with new materials and by mechanics skilled in the use of such materials. All repaired and/or replaced items shall be left in good as new or better condition.

## 23. REMOVAL OF EXISTING EQUIPMENT

23..1 All existing thermostats, grilles, registers, diffusers, ductwork, plumbing fixtures, copper tubing, water piping, waste piping, valves, etc., caused to be removed under these contracts shall remain the property of the Owner.

23..2 The Owner will designate those items which he will keep. The Contractor shall promptly remove all other items from the premises.

## 24. SUBSTITUTIONS

24..1 Substitution of products shown herein or on the drawings shall be made at the Owner's or Owner's authorized agent's approval only.

## 25. AIR SYSTEMS & AIR DISTRIBUTION TEST & BALANCE

25..1 General: The Contractor shall include in his bid the services of an AABC certified independent air balance and testing agency. A NEBB certified Contractor may perform this work if he has prior approval by the Architect and Owner. The testing agency shall be one which specializes in the balancing and testing of heating, ventilating and air conditioning systems, to balance, adjust and test air-moving equipment and air distributing or exhausting systems as herein specified. All work shall be done under direct supervision of a qualified heating and ventilating certified technician employed by the agency.

25..1.1 Air balancing shall be limited to the zones that are being modified in this project. .

25..2 Materials: All instruments used by this agency shall be accurately calibrated and maintained in good working order. If requested, conduct the tests in the presence of the Architect and/or the Mechanical Engineer responsible for the project and/or his representative. Do not begin air balance and testing until system has been completed and is in full working order. Put all heating, ventilating and air conditioning systems and equipment into full operation and continue the operation of same during each working day of testing and balancing. Submit within 15 days after receipt of the contract, 7 copies of submittal data for the testing and balancing of the air conditioning, heating and ventilating systems. The air balance agency shall provide proof of having successfully completed at least five projects of similar size and scope and shall be a certified member of Associated Air Balance Council or NEBB. Submit the test and balance contract to the Architect for approval within 90 days after the Air Conditioning Contractor has received his contract to proceed with the air conditioning installation to allow the air balance agency to schedule this work in cooperation with other trades involved and comply with the completion date.

25..3 Air Balancing: Upon completion of the air conditioning system, the air balance agency shall perform the following test, compile the test data, and submit five (5) copies of the complete test data to the Contractor for forwarding to the Owner, Architect and Engineer for review and approval.

25..4 Testing Procedure: The air balance agency shall perform the following tests, and balance system in accordance with the following requirements:

25..4.1 Test and adjust blower to obtain the required total airflow as indicated at the VAV units on the floor plans.

25..4.2 Test and record motor full load amperes.

25..4.3 Make pitot tube traverse of main supply ducts and obtain design CFM at fans when deemed necessary by Engineer.

25..4.4 Test and record system static pressure, suction and discharge.

25..4.5 Test and record entering air temperatures (DB heating and cooling).

25..4.6 Test and record entering air temperatures (WB cooling).

25..4.7 Test and record leaving air temperatures (DB heating and cooling).

25..4.8 Test and record leaving air temperatures (WB cooling).

25..4.9 Adjust all zones and VAV units to proper design CFM.

25..4.10 Test and adjust each ceiling diffuser, grille and register to within 10% of design requirements.

25..4.11 Each grille, diffuser and register shall be identified as to location and area on a set of plans included with report.

25..4.12 Identify and list size, type and manufacture of diffusers, grilles, registers and all tested equipment. Use manufacturer's ratings on all equipment to make required calculations.

25..4.13 Reading and tests of diffusers, grilles and registers shall include required velocity, required CFM, and test resultant CFM after adjustments.

25..4.14 In cooperation with the control manufacturer's representative, setting adjustments of automatically operated dampers to operate as specified, indicated and/or noted.

25..4.15 Adjust all diffusers, grilles, and registers to minimize drafts in all areas.

25..4.16 As part of the work of this contract, the Air Conditioning Contractor shall make any changes in the pulleys, belts and dampers or the addition of dampers required for corrected balance as recommended by air balance agency, at no additional cost to Owner. The Contractor shall furnish the necessary labor to assist the testing agency to complete its work.

25..4.17 Test and balance agency shall include an extended warranty (in addition to the one year guarantee period) of 90 days after completion or resetting of any outlet, supply air fan or exhaust fans as listed in test report. The agency shall provide technicians to assist the Engineer in making any tests he may require during this period of time.

## 26. FINAL TESTS

26..1 Before acceptance and final payment, it shall be demonstrated that all apparatus is functioning properly and efficiently. Air quantities shall be balanced for even temperature throughout.

27. GUARANTEE

27..1 The system shall be guaranteed for a period of one (1) year and all defective materials and workmanship for a period of one (1) year after completion and acceptance shall be replaced without addition charges.

-END-

## SECTION 15100

### HEATING, VENTILATING & AIR CONDITIONING

#### 1. GENERAL

1..1 The General Requirements for Air Conditioning and Plumbing specifications is an integral part of this section.

#### 2. SUMMARY OF WORK

2..1 The work included in this section consists of furnishing all labor, materials and equipment necessary for the remodeling of the existing air conditioning system as indicated on the drawings and as described herein. Rework and deliver each system complete, in perfect working order and in full accordance with the intent and meaning of the drawings and specifications. The work in general consists of, but is not limited to, the following work:

2..1.1 Remodeling of air conditioning systems as indicated on the drawings.

2..1.2 Removal and replacement of duct and pipe insulation as indicated on the drawings.

2..1.3 Relocating and additional control apparatus as indicated on the drawings.

2..1.4 Rebalancing of air quantities in remodeled areas.

2..1.5 Other items as required to provide a complete and operating system.

#### 3. HYDRONIC PIPING

3..1 Furnish piping necessary to connect new terminal VAV Boxes to the existing heating hot water supply and return mains.

#### 4.

4..1 Pipe - Type L hard drawn copper tube, with wrought copper fittings conforming to ANSI B16.22-1980.

3..3 Pipe Insulation - Heavy density fiberglass with fire retardant vapor barrier jacket with self sealing laps. Thickness shall be 1-1/2 inches on heating supply and return lines.

#### 5. DUCTWORK

5..1 Fabricate and install all ductwork in strict conformance with the latest SMACNA Manual for Low Velocity Duct Construction Standards or the latest SMACNA Manual for High Pressure Duct Construction Standards as applicable. "Ductmate" and similar duct joining systems are not to be used without written permission of the Owner.

5..2 Each duct system shall be complete with all required ductwork fittings, turning vanes, splitter dampers and supports, and extractors at all right angle takeoffs. Fittings shall comply with details on the drawings.

5..3 Ductwork shall be galvanized, prime grade, lock forming quality steel (LFQ) having a galvanized coating of 1-1/4 ounces to total for both sides of one square foot of a sheet.

5..4 Cross-break all sides of all ducts.

5..5 All longitudinal and transverse seam shall be sealed with approved duct sealant.

5..5.1 Approved duct sealants:

Hardcast - Versa Grip 102  
Design Polymerics - DP- 1010  
United - Water based Duct Sealer  
Duro Dyne - S2

5.6 Provide single thickness, factory fabricated, galvanized sheet steel turning vanes with airfoil contour in all right angle elbows and all elbows with a radius less than 1-1/2 times the width of the duct.

5.7 Duct sizes shown on drawings are to the inside of acoustical linings. Increase sizes of ducts as required to accommodate acoustical insulation.

5.8 Flexible connections shall be 30-ounce, closely woven, fire retardant glass fabric that is waterproof and airtight and a minimum of " wide.

## 6. INSULATION

6.1 General: All insulation, materials, coverings, adhesives, vapor barriers and tapes shall conform to NBFU 90A, flame spread classification not to exceed 25 and smoke development not to exceed 50.

6.2 Acoustical Insulation (Ductwork):

6.2.1 Scope: Line supply air ducts, only where indicated on the plans, with 1" thick acoustical insulation.

6.2.2 Materials: Insulation shall be 1-1/2 pound density fiberglass duct liner meeting ASTM C 1071, installed in strict conformance with the manufacturer's requirements, using Minnesota Mining Co. #38 fire retardant adhesive, or approved, applied continuously on all sides of ducts. Use Duro Dyne or Miracle welded surface anchors on 12" centers and within 2" of edges for all low pressure supply ducts.

## 7. AIR HANDLING AND AIR DISTRIBUTION SPECIALTIES

7.1 General: Furnish and install all air outlets, dampers, single duct VAV boxes, etc., as shown on the drawings and herein specified. Each grille, register or diffuser must be designed for service intended of size and capacities indicated and be complete with all accessories as indicated.

7.2 Provide all diffusers and all supply and return registers with inside and dampers painted flat black, complete with neoprene gasketing all around.

7.3 Provide extractors behind all diffusers, grilles, and registers with right angle takeoffs. Provide plaster frames for all outlets in plaster or gypsum board.

7.4 All grilles, registers, and diffusers shall be set flush and true to the wall or ceilings to prevent air leakage around the edges.

7.5 Terminal Air Mixing Units: Furnish and install or relocate as indicated on the drawings all air mixing units of the size, type and capacity indicated on the drawings, complete with all controls, and accessories as scheduled, indicated on the drawings and specified herein. Each unit shall be pressure independent type, single duct, variable air volume control assembly as indicated on the drawings.

## 8. RETURN AIR SYSTEMS

8.1 Existing return air system is by below floor plenum return, verify that existing return air boots are good condition with original acoustical liner intact.

7.2 Install new return air grilles as scheduled, modify the duct opening at the wall as necessary to accommodate the new grille, size may be different than the grill removed.

## 9. GRILLES REGISTERS AND DIFFUSERS

### 9..1 Ceiling Diffusers

#### 9..1.1 Finish - Off-white baked enamel

#### 9..1.2 Approved Manufacturers

Carnes - SKSA (4-way-blow diffusers to have two straps on center cone)

J & J - R-1400

Krueger - SH

Metalaire - 5500S

Titus - TDC-6

### 9..2 Return Grilles

#### 9..2.1 Finish - Off-white baked enamel

#### 9..2.2 Blade spacing - 1/2".

#### 9..2.3 Approved Manufacturers

Carnes - RSLA

J & J - S90H

Krueger - S85H

Metalaire - SRH

Titus - 355SL

9..3 Anchor securely into openings. Secure frames to ductwork by using four sheet metal screws, one per side. Level floor registers and anchor securely into floor.

## 10. CONTROLS

10..1 Provide full stand alone Lon Works compatible electronic controls to each new VAV terminal unit, including VAV controller, modulating water valve, thermostat and conductors.

10..2 Thermostats to be low voltage type with automatic change over, 7 day programable with a minimum of 2 starts and stops per day.

#### 10..3 Sequence of Operation:

Single duct VAV unit shall be controlled from space mounted thermostat for reporting and set point adjustment.

-END-

## TABLE OF CONTENTS

### **DIVISION 26 - ELECTRICAL**

26 0500	GENERAL ELECTRICAL REQUIREMENTS
26 0501	MINOR ELECTRICAL DEMOLITION
26 0519	POWER CONDUCTORS AND CABLES
26 0526	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 0529	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 0534	CONDUIT
26 0535	SURFACE RACEWAYS
26 0537	BOXES
26 0553	IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 2416	PANELBOARDS
26 2717	EQUIPMENT WIRING
26 2726	WIRING DEVICES
26 2818	ENCLOSED SWITCHES
26 4313	TRANSIENT-VOLTAGE SUPPRESSION
26 5100	INTERIOR LIGHTING

### **DIVISION 27 - COMMUNICATIONS**

27 1005	STRUCTURED CABLING FOR VOICE AND DATA - INSIDE-PLANT
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### **DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

28 3100	FIRE DETECTION AND ALARM
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## SECTION 26 0500

### GENERAL ELECTRICAL REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Provide labor, materials, and equipment necessary for completion of work of this Division as described in Contract Documents.

##### 1.02 RELATED SECTIONS

- A. General Conditions and Division 01 apply to this Section

##### 1.03 SUBMITTALS

- A. As-Built Drawings
  - 1. Provide complete set with all changes made to original drawings. Provide CADD files as well as mylar prints. Hand-drawn changes are not acceptable.
  - 2. Product Data
    - a. Submit for the following:
      - 1) Wiring devices
      - 2) Disconnects
      - 3) Panelboards
      - 4) Lighting fixtures and associated control equipment
      - 5) Emergency lighting packs
      - 6) Fire alarm & detection equipment
      - 7) Transient Voltage Surge Supression equipment
    - b. Provide the following information for each item of equipment:
      - 1) Catalog sheets
      - 2) Assembly details of dimension drawings
      - 3) Installation instructions
      - 4) Manufacturer's name and catalog number
      - 5) Name of local supplier
      - 6) Name of electrical contractor
  - 3. Operation & Maintenance Manual
    - a. Provide two copies of Operation and Maintenance Manuals.
      - 1) Binder - Loose-leaf type with hard cover. Title on outside of front cover and on spine.
      - 2) Title Page - List the following information
        - (a) Name of Project
        - (b) Date Project Completed
        - (c) Name and Address of Architect, Electrical Engineer, General Contractor, Electrical Contractor, and Suppliers.
      - 3) Table of Contents -
        - (a) List equipment in order that it appears in Binder.
      - 4) Dividers -
        - (a) Provide one divider with tab for each type of equipment listed in Table of Contents. Properly label tabs.
      - 5) Equipment Information - Provide following information for each item of equipment
        - (a) Catalog Sheets.
        - (b) Assembly details or dimension drawings.
        - (c) Installation, operating, and maintenance instructions.
        - (d) manufacturer's name and catalog number
        - (e) Name of local supplier.
      - 6) Furnish such information for following equipment and arrange as listed -

- (a) Disconnect Switches.
- (b) Wiring Devices.
- (c) Lighting Fixtures.
- (d) Panelboards
- (e) Safety Switches
- (f) Fire alarm and detection system
- (g) Communications systems equipment
- (h) Emergency Battery Packs

#### **1.04 REQUIREMENTS OF REGULATORY AGENCIES**

- A. Furnish UL listed equipment where such label is available. Install in conformance with UL standards where applicable.
- B. Install electrical work in accordance with Drawings and Specifications, edition of NEC in effect at project location, recommendations of NFPA, state and local electrical and building codes, and special codes having jurisdiction over specific portions of work. This includes, but is not limited to the following
  - 1. 2005 National Electrical Code with applicable local amendments
  - 2. 2006 International Fire Code
  - 3. 2006 Life Safety Code, NFPA 101
  - 4. 2006 International Building Code
  - 5. In the event of conflict between Drawings, Specifications and such codes, notify Architect in writing prior to bid. A ruling will then be made by Architect in writing.
  - 6. Obtain permits and certificates of approval from all authorities having jurisdiction over the installation and pay all fees required for scope of work being done including connection fees, impact fees, power company installation costs, etc.

#### **1.05 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Guarantee work to be free from defects of materials and workmanship for a period of one year from date of final acceptance of building by authorities having jurisdiction.
- C. Furnish owner with three written copies of Guarantee-Warranty.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Substitutions: See Section 01 6000 - Product Requirements.
  - 1. Where Manufacturer's names appear, other Manufacturers may be substituted upon obtaining written approval of Architect at least 10 days prior to opening of bids
  - 2. Any prior approval of alternate equipment does not automatically exempt the supplier from meeting the intent of these specifications. Failure to comply with the operational and functional intent of these specifications may result in the total removal of the alternate system at the expense of the contractor.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Confirm dimensions, ratings, and specifications of equipment to be installed and coordinate these with site dimensions and with other Sections. Coordinate electrical equipment locations with other trades to maintain required working clearances and prevent encroachment into such working spaces.
- B. Confirm and verify electrical power specifications (i.e., voltage, phase, amperage, etc.) and electrical equipment and material requirements for all HVAC equipment, water heaters, water

coolers, appliances, pumps, and other powered equipment provided by others, before beginning rough-in. All coordination shall be done with approved shop drawings or submittals.

### **3.02 INSTALLATION**

- A. Electrical drawings are diagrammatic. Do not scale for exact sizes or locations. Drawings are not intended to disclose absolute or unconditional knowledge of actual field conditions. Some equipment may need to be relocated from the locations indicated on the drawings to maintain working spaces around equipment. Any such coordination and relocation shall be the responsibility of the electrical contractor.
- B. Be prepared to relocate any outlet or device 6 feet in any direction without additional charge to the owner prior to wall, ceiling, or floor finish materials being installed.
- C. Install equipment according to manufacturer's recommendations.
- D. In the event of conflict between specifications and drawings, or between various areas on drawings or specifications, notify Engineer in writing in sufficient time prior to bid to prepare the supplementary drawings and specification addenda required to resolve the conflict. If the conflict is not reported timely, prior to the opening of bids, it shall be the responsibility of the Contractor to resolve the conflict and provide the installation in accordance with the governing codes and to the satisfaction of the Architect, without additional compensation. In the event of a conflict, the most stringent requirement shall govern.
- E. Provide electrical equipment and materials for, and make all connections to equipment furnished by others as required for a complete and operable system.

### **3.03 FIELD QUALITY CONTROL**

- A. Test systems and demonstrate equipment as working and operating properly. Rectify defects at no additional cost to Owner.
- B. All work under this division shall be executed in a thorough workmanlike manner, as determined by the Engineer, by competent and experienced journeyman electricians.
- C. All work shall be installed in strict conformance with all manufacturers' requirements and recommendations.

### **3.04 FIRE STOPPING AND SEALING**

- A. Seal around conduits or other wiring materials passing through fire rated walls in accordance with Architectural details and/or specifications using U.L. listed fire caulk.

### **3.05 TEMPORARY LIGHTING AND POWER**

- A. Provide, maintain and remove after construction is completed, temporary lighting adequate for workman safety and temporary power for all trades including any 3-phase power required.
- B. Provide and maintain barricade lighting where required to adequately protect owner against liability for damage to public or personnel.

### **3.06 CUTTING AND PATCHING**

- A. Cut all openings required to install the work of this Division or to repair any defective work. Cost for all cutting and patching required by the work of this Division shall be included, however, the actual cutting and patching shall be under the Prime Contractor's direction. Exercise due diligence to avoid cutting openings larger than required or openings that are in the wrong locations.
- B. It is the intent to minimize the amount of exposed conduit on the roof and penetrations through the roof. Install conduit below roof and up through the inside of the equipment where possible.

In the event roof penetrations must be made, the conduit shall be installed through waterproof sheetmetal housings or water proof pitch pans as detailed on the drawings.

### **3.07 IDENTIFICATIONS**

- A. Provide for each dimmer, panelboard, terminal cabinet, motor starter, motor controller, pushbutton, control switch, time clock, etc., furnished and/or installed under this Division of the Specifications, with identification as to its designation or specific function. Identification shall be a laminated, white core, black plastic nameplate with beveled edges. Lettering shall be machine-engraved, not less than 3/16 in. high, cut through the black surface to the white core. Secure nameplate to the identified item by the use of stainless steel self-tapping screws. Impressed plastic shall not be used to satisfy this requirement. Panel schedules shall be typed.

### **3.08 INSPECTIONS:**

- A. All work of this division shall be inspected periodically by the Engineer. The contractor shall notify the engineer minimum one week prior to the requested inspection date. At a minimum, inspections shall be performed upon completion of the following phases of construction -
  1. Completion of underground conduit rough-in, prior to concrete floor installation.
  2. Completion of above-grade conduit rough-in, prior to installation of wall material (gypboard).
  3. Substantial completion of entire electrical system.
  4. Failure to notify the engineer at the indicated times during construction may result in removal of concrete, wall board or other materials to allow a complete inspection.
  5. At the request of the Engineer, the contractor shall remove panel covers, fixture lenses, ballast covers, wall plates, wiring devices, and any other items as required to allow a complete inspection and determination of compliance with the contract documents.

**END OF SECTION**

**PROJECT MANUAL**

**SUU SUCCESS ACADEMY**

**LOCATED IN  
CEDAR CITY, UTAH**

**FOR  
DIVISION OF FACILITIES  
CONSTRUCTION AND MANAGEMENT**

**DATE: SEPTEMBER 28, 2007**

**DFCM PROJECT NO.: 07035730**

**ARCHITECT'S PROJECT NO.: 07478**

**ARCHITECT: SARGENT DESIGN GROUP  
36 NORTH 300 WEST  
SUITE 2  
CEDAR CITY, UTAH 84720  
PHONE: (435) 586-8510  
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## TABLE OF CONTENTS

### DIVISION 26 - ELECTRICAL

26 0500	GENERAL ELECTRICAL REQUIREMENTS
26 0501	MINOR ELECTRICAL DEMOLITION
26 0519	POWER CONDUCTORS AND CABLES
26 0526	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 0529	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 0534	CONDUIT
26 0535	SURFACE RACEWAYS
26 0537	BOXES
26 0553	IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 2717	EQUIPMENT WIRING
26 2726	WIRING DEVICES
26 2818	ENCLOSED SWITCHES
26 5100	INTERIOR LIGHTING

### DIVISION 27 - COMMUNICATIONS

27 1005	STRUCTURED CABLING FOR VOICE AND DATA - INSIDE-PLANT
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### DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

28 3100	FIRE DETECTION AND ALARM
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## SECTION 26 0500

### GENERAL ELECTRICAL REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Provide labor, materials, and equipment necessary for completion of work of this Division as described in Contract Documents.

##### 1.02 RELATED SECTIONS

- A. General Conditions and Division 01 apply to this Section

##### 1.03 SUBMITTALS

- A. As-Built Drawings
  - 1. Provide complete set with all changes made to original drawings. Provide CADD files as well as mylar prints. Hand-drawn changes are not acceptable.
  - 2. Product Data
    - a. Submit for the following:
      - 1) Wiring devices
      - 2) Disconnects
      - 3) Lighting fixtures and associated control equipment
      - 4) Emergency lighting packs
      - 5) Fire alarm & detection equipment
    - b. Provide the following information for each item of equipment:
      - 1) Catalog sheets
      - 2) Assembly details of dimension drawings
      - 3) Installation instructions
      - 4) Manufacturer's name and catalog number
      - 5) Name of local supplier
      - 6) Name of electrical contractor
  - 3. Operation & Maintenance Manual
    - a. Provide two copies of Operation and Maintenance Manuals.
      - 1) Binder - Loose-leaf type with hard cover. Title on outside of front cover and on spine.
      - 2) Title Page - List the following information
        - (a) Name of Project
        - (b) Date Project Completed
        - (c) Name and Address of Architect, Electrical Engineer, General Contractor, Electrical Contractor, and Suppliers.
      - 3) Table of Contents -
        - (a) List equipment in order that it appears in Binder.
      - 4) Dividers -
        - (a) Provide one divider with tab for each type of equipment listed in Table of Contents. Properly label tabs.
      - 5) Equipment Information - Provide following information for each item of equipment
        - (a) Catalog Sheets.
        - (b) Assembly details or dimension drawings.
        - (c) Installation, operating, and maintenance instructions.
        - (d) manufacturer's name and catalog number
        - (e) Name of local supplier.
      - 6) Furnish such information for following equipment and arrange as listed -
        - (a) Disconnect Switches.
        - (b) Wiring Devices.

- (c) Lighting Fixtures.
- (d) Safety Switches
- (e) Communications systems equipment
- (f) Emergency Battery Packs

#### **1.04 REQUIREMENTS OF REGULATORY AGENCIES**

- A. Furnish UL listed equipment where such label is available. Install in conformance with UL standards where applicable.
- B. Install electrical work in accordance with Drawings and Specifications, edition of NEC in effect at project location, recommendations of NFPA, state and local electrical and building codes, and special codes having jurisdiction over specific portions of work. This includes, but is not limited to the following
  - 1. 2005 National Electrical Code with applicable local amendments
  - 2. 2006 International Fire Code
  - 3. 2006 Life Safety Code, NFPA 101
  - 4. 2006 International Building Code
  - 5. In the event of conflict between Drawings, Specifications and such codes, notify Architect in writing prior to bid. A ruling will then be made by Architect in writing.
  - 6. Obtain permits and certificates of approval from all authorities having jurisdiction over the installation and pay all fees required for scope of work being done including connection fees, impact fees, power company installation costs, etc.

#### **1.05 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Guarantee work to be free from defects of materials and workmanship for a period of one year from date of final acceptance of building by authorities having jurisdiction.
- C. Furnish owner with three written copies of Guarantee-Warranty.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Substitutions: See Section 01 6000 - Product Requirements.
  - 1. Where Manufacturer's names appear, other Manufacturers may be substituted upon obtaining written approval of Architect at least 10 days prior to opening of bids
  - 2. Any prior approval of alternate equipment does not automatically exempt the supplier from meeting the intent of these specifications. Failure to comply with the operational and functional intent of these specifications may result in the total removal of the alternate system at the expense of the contractor.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Confirm dimensions, ratings, and specifications of equipment to be installed and coordinate these with site dimensions and with other Sections. Coordinate electrical equipment locations with other trades to maintain required working clearances and prevent encroachment into such working spaces.
- B. Confirm and verify electrical power specifications (i.e., voltage, phase, amperage, etc.) and electrical equipment and material requirements for all HVAC equipment, water heaters, water coolers, appliances, pumps, and other powered equipment provided by others, before beginning rough-in. All coordination shall be done with approved shop drawings or submittals.

#### **3.02 INSTALLATION**

- A. Electrical drawings are diagrammatic. Do not scale for exact sizes or locations. Drawings are not intended to disclose absolute or unconditional knowledge of actual field conditions. Some equipment may need to be relocated from the locations indicated on the drawings to maintain working spaces around equipment. Any such coordination and relocation shall be the responsibility of the electrical contractor.
- B. Be prepared to relocate any outlet or device 6 feet in any direction without additional charge to the owner prior to wall, ceiling, or floor finish materials being installed.
- C. Install equipment according to manufacturer's recommendations.
- D. In the event of conflict between specifications and drawings, or between various areas on drawings or specifications, notify Engineer in writing in sufficient time prior to bid to prepare the supplementary drawings and specification addenda required to resolve the conflict. If the conflict is not reported timely, prior to the opening of bids, it shall be the responsibility of the Contractor to resolve the conflict and provide the installation in accordance with the governing codes and to the satisfaction of the Architect, without additional compensation. In the event of a conflict, the most stringent requirement shall govern.
- E. Provide electrical equipment and materials for, and make all connections to equipment furnished by others as required for a complete and operable system.

### **3.03 FIELD QUALITY CONTROL**

- A. Test systems and demonstrate equipment as working and operating properly. Rectify defects at no additional cost to Owner.
- B. All work under this division shall be executed in a thorough workmanlike manner, as determined by the Engineer, by competent and experienced journeyman electricians.
- C. All work shall be installed in strict conformance with all manufacturers' requirements and recommendations.

### **3.04 FIRE STOPPING AND SEALING**

- A. Seal around conduits or other wiring materials passing through fire rated walls in accordance with Architectural details and/or specifications using U.L. listed fire caulk.

### **3.05 TEMPORARY LIGHTING AND POWER**

- A. Provide, maintain and remove after construction is completed, temporary lighting adequate for workman safety and temporary power for all trades including any 3-phase power required.
- B. Provide and maintain barricade lighting where required to adequately protect owner against liability for damage to public or personnel.

### **3.06 CUTTING AND PATCHING**

- A. Cut all openings required to install the work of this Division or to repair any defective work. Cost for all cutting and patching required by the work of this Division shall be included, however, the actual cutting and patching shall be under the Prime Contractor's direction. Exercise due diligence to avoid cutting openings larger than required or openings that are in the wrong locations.
- B. It is the intent to minimize the amount of exposed conduit on the roof and penetrations through the roof. Install conduit below roof and up through the inside of the equipment where possible. In the event roof penetrations must be made, the conduit shall be installed through waterproof sheetmetal housings or water proof pitch pans as detailed on the drawings.

### **3.07 IDENTIFICATIONS**

- A. Provide for each dimmer, panelboard, terminal cabinet, motor starter, motor controller, pushbutton, control switch, time clock, etc., furnished and/or installed under this Division of the Specifications, with identification as to its designation or specific function. Identification shall be a laminated, white core, black plastic nameplate with beveled edges. Lettering shall be machine-engraved, not less than 3/16 in. high, cut through the black surface to the white core. Secure nameplate to the identified item by the use of stainless steel self-tapping screws. Impressed plastic shall not be used to satisfy this requirement. Panel schedules shall be typed.

### **3.08 INSPECTIONS:**

- A. All work of this division shall be inspected periodically by the Engineer. The contractor shall notify the engineer minimum one week prior to the requested inspection date. At a minimum, inspections shall be performed upon completion of the following phases of construction -
  1. Completion of underground conduit rough-in, prior to concrete floor installation.
  2. Completion of above-grade conduit rough-in, prior to installation of wall material (gypboard).
  3. Substantial completion of entire electrical system.
  4. Failure to notify the engineer at the indicated times during construction may result in removal of concrete, wall board or other materials to allow a complete inspection.
  5. At the request of the Engineer, the contractor shall remove panel covers, fixture lenses, ballast covers, wall plates, wiring devices, and any other items as required to allow a complete inspection and determination of compliance with the contract documents.

**END OF SECTION**

## SECTION 26 0501

### MINOR ELECTRICAL DEMOLITION

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Electrical demolition.

#### PART 2 PRODUCTS

##### 2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

#### PART 3 EXECUTION

##### 3.01 EXAMINATION

- A. Verify field measurements and circuiting arrangements are as shown on Drawings.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Demolition drawings are based on casual field observation.
- D. Report discrepancies to Architect before disturbing existing installation.
- E. Beginning of demolition means installer accepts existing conditions.

##### 3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Minimize outage duration.
  - 1. Notify Owner before partially or completely disabling system.
  - 2. Notify local fire service.
  - 3. Make notifications at least 24 hours in advance.
  - 4. Make temporary connections to maintain service in areas adjacent to work area.

##### 3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
- E. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- F. Repair adjacent construction and finishes damaged during demolition and extension work.

- G. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- H. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

### **3.04 CLEANING AND REPAIR**

- A. Clean and repair existing materials and equipment which remain or are to be reused.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.
- C. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

**END OF SECTION**

## SECTION 26 0519

### POWER CONDUCTORS AND CABLES

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Wire and cable for 600 volts and less.
- B. Wiring connectors and connections.

#### PART 2 PRODUCTS

##### 2.01 WIRING REQUIREMENTS

- A. Concealed Dry Interior Locations: Use only building wire in raceway or metal clad cable.
- B. Exposed Dry Interior Locations: Use only building wire in raceway.
- C. Above Accessible Ceilings: Use only building wire in raceway or metal clad cable.
- D. Wet or Damp Interior Locations: Use only building wire in raceway or metal clad cable.
- E. Underground Installations: Use only building wire in raceway, direct burial cable, or service-entrance cable.
- F. Use solid conductor for feeders and branch circuits 10 AWG and smaller.
- G. Use stranded conductors for control circuits.
- H. Use conductor not smaller than 12 AWG for power and lighting circuits.
- I. Use conductor not smaller than 16 AWG for control circuits.
- J. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- K. Conductor sizes are based on copper unless indicated as aluminum or "AL".

##### 2.02 BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.

##### 2.03 METAL CLAD CABLE

- A. Description: NFPA 70, Type MC.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 90 degrees C.
- E. Insulation Material: Thermoplastic.
- F. Armor Material: Steel.
- G. Armor Design: Interlocked metal tape.

##### 2.04 WIRING CONNECTORS

- A. Spring Wire Connectors:
  - 1. Product: Type 512, 3M tapeless steel spring wire connectors

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.
- C. Verify that raceway installation is complete and supported.
- D. Verify that field measurements are as indicated.

### **3.02 INSTALLATION**

- A. Install conductors in raceway unless indicated otherwise.
- B. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.
- C. Route wire and cable as required to meet project conditions.
  - 1. Wire and cable routing indicated is approximate unless dimensioned.
  - 2. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
  - 3. Include wire and cable of lengths required to install connected devices within 10 ft of location shown.
- D. Use wiring methods indicated.
- E. Conductors shall be continuous from outlet to outlet.
- F. Pull all conductors into raceway at same time.
- G. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- H. Protect exposed cable from damage.
- I. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.
- J. Use suitable cable fittings and connectors.
- K. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- L. Clean conductor surfaces before installing lugs and connectors.
- M. Where common neutral is run for two or three home run circuits, connect phase conductors to breakers in panel which are attached to separate phase legs in order that neutral conductors will carry only unbalanced current.
- N. Branch circuit neutral conductors shall be one size larger than the phase conductors unless specifically noted otherwise.
- O. Run conductors of different voltage systems in separate conduits.
- P. Conductors size #10 and smaller shall be colored throughout.
- Q. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- R. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- S. Identify and color code wire and cable under provisions of Section 26 0553. Identify each conductor with its circuit number or other designation indicated.

**END OF SECTION**

## SECTION 26 0526

### GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Grounding and bonding components.

#### PART 2 PRODUCTS

##### 2.01 CONNECTORS AND ACCESSORIES

- A. Mechanical Connectors: Bronze.
- B. Wire: Stranded copper with green insulation.

#### PART 3 EXECUTION

##### 3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

##### 3.02 INSTALLATION

- A. Pull ground conductors in all non-metallic raceways, flexible conduit, and liquid tight flexible conduit. Use same size ground as phase conductors up through #10 AWG. Use NEC Table 250-66 for all others unless noted otherwise on Drawings.
- B. Provide bonding jumpers across expansion and deflection couplings in conduit runs, across pipe connections at water meters, and across dielectric couplings in metallic cold water piping systems
- C. Provide bonding jumpers from all wiring device grounding terminals to metal backbox.
- D. Provide bonding to meet requirements described in Quality Assurance.
- E. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

**END OF SECTION**

## **SECTION 26 0529**

### **HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Conduit and equipment supports.
- B. Anchors and fasteners.

#### **PART 2 PRODUCTS**

##### **2.01 MATERIALS**

- A. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
- B. Supports: Fabricated of structural steel or formed steel members; galvanized or painted.

#### **PART 3 EXECUTION**

##### **3.01 INSTALLATION**

- A. Install hangers and supports as required to adequately and securely support electrical system components, in a neat and workmanlike manner, as specified in NECA 1.
  - 1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
  - 2. Obtain permission from Architect before drilling or cutting structural members.
- B. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- C. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- D. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch off wall.
- E. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

**END OF SECTION**

## SECTION 26 0534

### CONDUIT

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Conduit, fittings and conduit bodies.

##### 1.02 RELATED SECTIONS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0537 - Boxes.

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Accept conduit on site. Inspect for damage.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- C. Protect PVC conduit from sunlight.

#### PART 2 PRODUCTS

##### 2.01 CONDUIT REQUIREMENTS

- A. Conduit Size: Comply with NFPA 70.
  - 1. Minimum Size: 3/4 inch unless otherwise specified.
- B. Wet and Damp Locations: Use rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
- C. Dry Locations:
  - 1. Concealed: Use rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
  - 2. Exposed: Use rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.

##### 2.02 METAL CONDUIT

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Intermediate Metal Conduit (IMC): Rigid steel.
- C. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

##### 2.03 FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction.
- B. Fittings: NEMA FB 1.

##### 2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction with PVC jacket.
- B. Fittings: NEMA FB 1.

##### 2.05 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: ANSI C80.3; galvanized tubing.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron compression type.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as shown on drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

### **3.02 INSTALLATION**

- A. Install conduit securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install steel conduit as specified in NECA 101.
- C. Arrange supports to prevent misalignment during wiring installation.
- D. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- E. Group related conduits; support using conduit rack. Construct rack using steel channel.
- F. Fasten conduit supports to building structure and surfaces under provisions of Section 26 0529.
- G. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- H. Do not attach conduit to ceiling support wires.
- I. Arrange conduit to maintain headroom and present neat appearance.
- J. Route exposed conduit parallel and perpendicular to walls.
- K. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- L. Route conduit in and under slab from point-to-point.
- M. Maintain adequate clearance between conduit and piping.
- N. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
- O. Cut conduit square using saw or pipecutter; de-burr cut ends.
- P. Bring conduit to shoulder of fittings; fasten securely.
- Q. Install insulated bushings on each end of conduit 1 1/4 inches in diameter and larger.
- R. Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one shot bender to fabricate bends in metal conduit larger than 2 inch size.
- S. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- T. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic.
- U. Provide suitable pull string in each empty conduit except sleeves and nipples.
- V. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Ground and bond conduit under provisions of Section 26 0526.

### **3.03 PROHIBITED PROCEDURES**

- A. Use of wooden plugs inserted in concrete or masonry units as base for fastening conduits, tubing, boxes, cabinets, or other equipment.
- B. Installation of conduit or tubing which has been crushed or deformed.

**END OF SECTION**

## **SECTION 26 0535**

### **SURFACE RACEWAYS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Surface metal raceways.
- B. Surface nonmetal raceways.
- C. Multi-outlet assemblies.
- D. Wireways.

##### **1.02 RELATED SECTIONS**

- A. Section 26 2726 - Wiring Devices: Receptacles.

#### **PART 2 PRODUCTS**

##### **2.01 SURFACE RACEWAYS**

- A. Surface Metal Raceway: Sheet metal channel with fitted cover, suitable for use as surface metal raceway.
- B. Surface Nonmetal Raceway: Plastic channel with fitted cover, suitable for use as surface raceway.
- C. Multioutlet Assembly: Sheet metal channel with fitted cover, with pre-wired receptacles suitable for use as multioutlet assembly.
  - 1. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories.
  - 2. Fittings: Furnish manufacturer's standard couplings, elbows, outlet and device boxes and connectors.
- D. Wireway: Raintight type wireway.

#### **PART 3 EXECUTION**

##### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install raceways securely, in a neat and workmanlike manner, as specified in NECA 1.
- C. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces. Mount plumb and level.
- D. Use suitable insulating bushings and inserts at connections to outlets and corner fittings.
- E. Close ends of wireway and unused conduit openings.
- F. Ground and bond raceway and wireway under provisions of Section 26 0526.

**END OF SECTION**

## SECTION 26 0537

### BOXES

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Wall and ceiling outlet boxes.
- B. Pull and junction boxes.

#### PART 2 PRODUCTS

##### 2.01 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
- B. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.
- D. Wall Plates for Finished Areas: As specified in Section 26 2726.

##### 2.02 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

#### PART 3 EXECUTION

##### 3.01 EXAMINATION

- A. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

##### 3.02 INSTALLATION

- A. Label all circuits and source panels on exterior of each junction box.
- B. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.
- C. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.
- D. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- E. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
  - 1. Adjust box locations up to 10 feet if required to accommodate intended purpose.
- F. Orient boxes to accommodate wiring devices oriented as specified in Section 26 2726.
- G. Maintain headroom and present neat mechanical appearance.
- H. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- I. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- J. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- K. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

- L. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.
- M. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- N. Use flush mounting outlet box in finished areas.
- O. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- P. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
- Q. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- R. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- S. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- T. Use adjustable steel channel fasteners for hung ceiling outlet box.
- U. Do not fasten boxes to ceiling support wires.
- V. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
- W. Use gang box where more than one device is mounted together. Do not use sectional box.
- X. Use gang box with plaster ring for single device outlets.
- Y. Use cast outlet box in exterior locations exposed to the weather and wet locations.
- Z. Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations.

### **3.03 ADJUSTING**

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused box openings.

### **3.04 CLEANING**

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

**END OF SECTION**

## SECTION 26 0553

### IDENTIFICATION FOR ELECTRICAL SYSTEMS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Nameplates and labels.
- B. Wire and cable markers.

##### 1.02 REFERENCES

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005.

#### PART 2 PRODUCTS

##### 2.01 NAMEPLATES AND LABELS

- A. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
- B. Locations:
  - 1. Each electrical distribution and control equipment enclosure.
- C. Letter Size:
  - 1. Use 1/4 inch letters for identifying grouped equipment and loads.
- D. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. Use only for identification of individual wall switches and receptacles, control device stations, and \_\_\_\_\_.

##### 2.02 WIRE MARKERS

- A. Description: Cloth type wire markers.
- B. Locations: Each conductor at panelboard gutters, outlet boxes, and junction boxes each load connection.

##### 2.03 UNDERGROUND WARNING TAPE

- A. Description: 4 inch wide plastic tape, detectable type colored red with suitable warning legend describing buried electrical lines.

#### PART 3 EXECUTION

##### 3.01 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

##### 3.02 INSTALLATION

- A. Install nameplates and labels parallel to equipment lines.
- B. Secure nameplates to equipment front using screws or adhesive.
- C. Secure nameplates to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.

**END OF SECTION**

## SECTION 26 2717

### EQUIPMENT WIRING

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Electrical connections to equipment.

##### 1.02 RELATED SECTIONS

- A. Section 26 0534 - Conduit.
- B. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables (600 V and Less).
- C. Section 26 0537 - Boxes.
- D. Section 26 2726 - Wiring Devices.

##### 1.03 COORDINATION

- A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
- B. Determine connection locations and requirements.
- C. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- D. Sequence electrical connections to coordinate with start-up of equipment.

#### PART 2 PRODUCTS

##### 2.01 MATERIALS

- A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
  - 1. Colors: Conform to NEMA WD 1.
  - 2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
  - 3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
- B. Disconnect Switches: As specified in Section 26 2818.
- C. Wiring Devices: As specified in Section 26 2726.
- D. Flexible Conduit: As specified in Section 26 0534.
- E. Wire and Cable: As specified in Section 26 0519.
- F. Boxes: As specified in Section 26 0537.

#### PART 3 EXECUTION

##### 3.01 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

##### 3.02 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

**END OF SECTION**

## SECTION 26 2726

### WIRING DEVICES

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Wall switches.
- B. Receptacles.
- C. Device plates and decorative box covers.

##### 1.02 RELATED SECTIONS

- A. Section 26 0537 - Boxes.

##### 1.03 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

##### 1.04 EXTRA MATERIALS

- A. See Section 01 6000 - Product Requirements, for additional provisions.
- B. Furnish two of each style, size, and finish wall plate.

#### PART 2 PRODUCTS

##### 2.01 MANUFACTURERS

##### 2.02 WALL SWITCHES

- A. Wall Switches: General Duty, AC only general-use snap switch, complying with NEMA WD 6 and WD 1.
  - 1. Body and Handle: plastic with toggle handle.
  - 2. Ratings: Match branch circuit and load characteristics.
- B. Verify color with Architect before ordering devices.
- C. Switch Types: Single pole, double pole, 3-way, and 4-way.
- D. Approved Manufacturer
  - 1. Hubbell: CS1221 series
  - 2. Equal as approved by Architect prior to bidding

##### 2.03 OCCUPANCY SENSORS

- A. Ultrasonic Type
  - 1. Complete with sensor and combined relay / control transformer.
  - 2. Ceiling mount
  - 3. Approved Manufacturers and Models -
    - a. Honeywell -
      - 1) Sensor - EL7612A1001
      - 2) Relay / Transformer - EL7621A1002
    - b. Novitas -
      - 1) Sensor - 01-083
      - 2) Relay / Transformer - 13-012
    - c. Pass & Seymour -

- 1) Sensor - US1001
- 2) Relay / Transformer - PWP120
- d. Unenco -
  - 1) Sensor - C-600-R-QT1
  - 2) Relay / Transformer - 211-QT1
- e. Watt Stopper -
  - 1) Sensor - W-500A
  - 2) Relay / Transformer - A120-E
- B. Passive Infrared Type with Integral Override Switch
  - 1. Wall mount
  - 2. 180 deg coverage
  - 3. Integral light level sensor
  - 4. Adjustable sensitivity from 20% to 100%
  - 5. Time delay - 30 sec to 30 minutes
  - 6. Approved Manufacturers and Models -
    - a. Pass & Seymour (Legrand) - WS 3000

#### **2.04 RECEPTACLES**

- A. Receptacles: General duty, complying with NEMA WD 6 and WD 1.
  - 1. Device Body: plastic.
  - 2. Configuration: NEMA WD 6, type as specified and indicated.
  - 3. Convenience Receptacles: Type 5 to 15.
  - 4. Approved Manufacturers
    - a. Hubbell: CR5252 series
    - b. Equal as approved by Architect prior to bidding.
- B. GFCI Receptacles: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.
  - 1. Approved Manufacturer
    - a. Hubbell: GF5352I
    - b. Leviton: 6899-I

#### **2.05 WALL PLATES**

- A. Decorative Cover Plates: nylon.
- B. Jumbo Cover Plates: smooth plastic.
- C. Weatherproof Cover Plates: Corrosion resistant, in-use type
  - 1. Pass & Seymour: WIUC10-GL

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that outlet boxes are installed at proper height.
- B. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- C. Verify that floor boxes are adjusted properly.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

#### **3.02 PREPARATION**

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

### **3.03 INSTALLATION**

- A. Install securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. Mount wall switches on lock side of doors not more than 12 inches from trim and in accordance with barrier free design standards. Prior to rough-in, coordinate with architectural drawings to determine lock-side of door.
- E. Label source panel and circuit number on the back of all device cover plates.
- F. Install receptacles with grounding pole on bottom.
- G. Connect wiring device grounding terminal to outlet box with bonding jumper.
- H. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- I. Connect wiring devices by wrapping conductor around screw terminal.
- J. Use jumbo size plates for outlets installed in masonry walls.
- K. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
- L. Provide GFI receptacles in areas required by the National Electrical Code whether indicated on the drawings or not.

### **3.04 INTERFACE WITH OTHER PRODUCTS**

- A. Install wall switch 48 inches above finished floor.
- B. Install convenience receptacle 18 inches above finished floor.
- C. Install convenience receptacle 6 inches above counter.

### **3.05 FIELD QUALITY CONTROL**

- A. Perform field inspection, testing, and adjusting in accordance with Section 01 4000.
- B. Inspect each wiring device for defects.
- C. Operate each wall switch with circuit energized and verify proper operation.
- D. Verify that each receptacle device is energized.
- E. Test each receptacle device for proper polarity.
- F. Test each GFCI receptacle device for proper operation.

### **3.06 ADJUSTING**

- A. Adjust devices and wall plates to be flush and level.

### **3.07 CLEANING**

- A. Clean exposed surfaces to remove splatters and restore finish.

**END OF SECTION**

## SECTION 26 2818

### ENCLOSED SWITCHES

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Fusible switches.
- B. Nonfusible switches.

##### 1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

#### PART 2 PRODUCTS

##### 2.01 MANUFACTURERS

- A. Same as panelboard manufacturer.

##### 2.02 COMPONENTS

- A. Fusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.
  - 1. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
  - 2. Handle lockable in OFF position.
  - 3. Fuse clips: Designed to accommodate NEMA FU1, Class R fuses.
- B. Nonfusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.
  - 1. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
  - 2. Handle lockable in OFF position.
- C. Enclosures: NEMA KS 1.
  - 1. Interior Dry Locations: Type 1.
  - 2. Exterior Locations: Type 3R.

#### PART 3 EXECUTION

##### 3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install fuses in fusible disconnect switches.
- C. Label equipment, such as Fan Coil Unit FC-1. Label disconnects to indicate equipment served. Use 1/16 inch thick laminated plastic composition material with contrasting color core. Engraved letter shall be 1/4 inch high. Attach labels with screws.
- D. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

##### 3.02 FIELD QUALITY CONTROL

- A. Perform field inspection in accordance with Section 01 4000.
- B. Inspect and test in accordance with NETA STD ATS, except Section 4.
- C. Perform inspections and tests listed in NETA STD ATS, Section 7.5.

**END OF SECTION**

## SECTION 26 5100

### INTERIOR LIGHTING

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Interior luminaires and accessories.
- B. Ballasts.
- C. Fluorescent lamp emergency power supply.
- D. Lamps.
- E. Luminaire accessories.

##### 1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70 and NFPA 101.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

##### 1.03 EXTRA MATERIALS

- A. See Section 01 6000 - Product Requirements, for additional provisions.
- B. Furnish 10% of the total of each plastic lens type used on the project, minimum two of each type. Deliver to owner in protected, factory packaging.
- C. Furnish 10% replacement lamps of the total of each lamp type, minimum two of each type. Deliver to owner in protected, factory packaging.
- D. Furnish two of each ballast type.

#### PART 2 PRODUCTS

##### 2.01 LUMINAIRES

- A. Furnish products as indicated in Schedule included on the Drawings.

##### 2.02 BALLASTS AND CONTROL UNITS

- A. Fluorescent Ballasts: electronic solid state, suitable for lamps specified.
  - 1. UL listed and labeled
  - 2. Minimum power factor of 90 percent.
  - 3. Maximum total harmonic distortion of 10 percent.
  - 4. Audible noise level lower than quietest CBM certified ballast for same application.
  - 5. Transient protection in accordance with ANSI 62.41-1984.
  - 6. Comply with FCC Rules Part 18, 15J.
  - 7. Maximum crest factor of 1.7.
  - 8. One year full replacement warranty including labor allowance for replacement.
  - 9. Voltage: Match luminaire voltage.
  - 10. Certify fluorescent ballast design and construction by Certified Ballast Manufacturers, Inc.
  - 11. Substitutions: See Section 01 6000 - Product Requirements.
- B. High Intensity Discharge (HID) Ballasts: ANSI C82.4, metal halide lamp ballast, suitable for lamp specified.
  - 1. UL listed and labeled.
  - 2. Pulse Start.
  - 3. ANSI type M-144.

4. Maximum crest factor 1.6.
  5. One year full replacement warranty including labor allowance for replacement.
- C. Fluorescent Lamp Emergency Power Supply: Emergency battery power supply suitable for installation in ballast compartment of fluorescent luminaire.
1. Lamp Ratings: One F32/T8.
  2. Battery: Sealed lead calcium type, rated for 10 year life.
  3. Include TEST switch and AC ON indicator light, installed to be operable and visible from the outside of an assembled luminaire.
  4. Shall operate one lamp at approximately 1400 lumens initially and not less than 1000 lumens after 90 minutes.
- D. Provide zero degree rated ballasts on all exterior fixtures without additional cost to owner.

### **2.03 LAMPS**

- A. Manufacturers:
1. GE Lighting: [www.gelighting.com](http://www.gelighting.com).
  2. Philips Lighting Co of NA: [www.lighting.philips.com](http://www.lighting.philips.com).
- B. Lamp Types: As specified for each luminaire.
- C. Provide 130-volt incandescent lamps.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Mount fixtures as called for on drawings. Determine type of ceiling being installed in each space and furnish fixtures suitable for exact type, including roof/floor or ceiling/floor fire rated design with fire tenting required by Architect. All coordination and materials to be provided without additional cost to owner.
- B. Review lighting drawings and confirm ballast voltages for each fixture, or need for two ballasts to accommodate dual-level switching, or need for dimming ballasts to interface with dimming control, before ordering. Contractor shall not be eligible for additional compensation if fixtures are delivered with incorrect voltage ratings or too few ballasts, or non-dimming ballasts, as a result of inaccurate catalog numbers on drawings.
- C. Provide all necessary supports, brackets, adapters and miscellaneous equipment for mounting and installation of fixtures.
- D. Install fixtures securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting).
- E. Install suspended luminaires using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.
- F. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
- G. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- H. Exposed Grid Ceilings: Support surface mounted luminaires in grid ceiling directly from building structure.
- I. Install recessed luminaires to permit removal from below.
- J. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- K. Install clips to secure recessed grid-supported luminaires in place.

- L. Install wall mounted luminaires at height as indicated on Drawings.
- M. Install accessories furnished with each luminaire.
- N. Connect luminaires to branch circuit outlets provided under Section 26 0537 using flexible conduit.
- O. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- P. Bond products and metal accessories to branch circuit equipment grounding conductor.
- Q. Install specified lamps in each emergency lighting unit, exit sign, and luminaire.

### **3.02 FIELD QUALITY CONTROL**

- A. Perform field inspection in accordance with Section 01 4000.
- B. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

### **3.03 ADJUSTING**

- A. Aim and adjust luminaires as directed.
- B. Position exit sign directional arrows as indicated.

### **3.04 CLEANING**

- A. Clean electrical parts to remove conductive and deleterious materials.
- B. Remove dirt and debris from enclosures.
- C. Clean finishes and touch up damage.

### **3.05 DEMONSTRATION AND INSTRUCTIONS**

- A. Demonstrate luminaire operation for minimum of 8 hours.

### **3.06 PROTECTION**

- A. Relamp luminaires that have failed lamps at Substantial Completion.

**END OF SECTION**

## SECTION 27 1005

### STRUCTURED CABLING FOR VOICE AND DATA - INSIDE-PLANT

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Cabling and pathways inside building(s).
- B. Distribution frames, cross-connection equipment, enclosures, racks, and outlets.
- C. Modular jacks and device plates.
- D. Grounding and bonding the telecommunications distribution system.

##### 1.02 RELATED SECTIONS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems: Electrical system grounding and bonding.
- B. Section 26 0534 - Conduit.

##### 1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Storage and handling requirements and recommendations.
  - 2. Installation methods.
- C. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
- D. Manufacturer Qualifications.
- E. Installer Qualifications.
- F. Field Test Reports.

##### 1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.
- B. Installer Qualifications: A company having at least 5 Years experience in the installation and testing of the type of system specified, and:
  - 1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
  - 2. Supervisors and installers factory certified by manufacturers of products to be installed.

##### 1.05 WARRANTY

- A. A Lifetime Performance Warranty covering all components, equipment and workmanship shall be submitted in writing with system documentation. The warranty period shall begin on the system's first use by the owner.
- B. The project must be pre-registered with Manufacturer before installation has begun.
- C. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- D. Correct defective Work within a 2 year period after Date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Approved Cabling and Equipment Solutions:
  - 1. Nextlan
  - 2. Commscope Uniprise
  - 3. Equal as approved by Architect - All solutions must be end-to-end and be able to show shared engineering resources.
  - 4. Substitutions: See Section 01 6000 - Product Requirements.

### **2.02 SYSTEM DESIGN**

- A. Provide a complete, warranted, end-to-end, permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, patch panels, enclosures, racks and cabinets, and outlets.
  - 1. Comply with TIA/EIA-568 and TIA/EIA-569, latest editions.
  - 2. Provide fixed cables and pathways that comply with NFPA 70 and ANSI/J-STD-607 and are UL listed or third party independent testing laboratory certified.
  - 3. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F at relative humidity of 0 to 95 percent, noncondensing.
  - 4. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.
- B. Capacity:
  - 1. Horizontal Cabling: Copper.
  - 2. Offices and Work Areas: Provide one voice outlet and two data outlets in each work area.
  - 3. Provide additional outlets where indicated on drawings.
- C. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".

### **2.03 PATHWAYS**

- A. Conduit: As specified in Section 26 0534; provide pull cords in all conduit; minimum size 3/4".

### **2.04 COPPER CABLE AND TERMINATIONS**

- A. Copper Horizontal Cable: TIA/EIA-568 Category 6 solid conductor unshielded twisted pair (UTP), 23 AWG, 100 ohm; 4 individually twisted pairs; covered with blue jacket and complying with all relevant parts of and addenda to latest edition of TIA/EIA-568 and UL 444.
  - 1. In locations other than in plenums, provide NFPA 70 type CMG general purpose, CMR riser-rated, or type CMP plenum-rated cable.
  - 2. In plenums, provide NFPA 70 type CMP plenum-rated cable.
- B. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.
- C. Jacks and Connectors: RJ-45, non-keyed, terminated with 110-style insulation displacement connectors; high impact thermoplastic housing; complying with same standard as specified horizontal cable and UL 1863.
  - 1. Performance: 500 mating cycles.
  - 2. Voice and Data Jacks: 4-pair, pre-wired to T568A configuration, with color-coded indications for T568B configuration.

## 2.05 CROSS-CONNECTION EQUIPMENT

- A. Connector Blocks for Category 5e and Up Cabling: Type 110 insulation displacement connectors; capacity sufficient for cables to be terminated plus 25 percent spare.
- B. Patch Panels for Copper Cabling: Sized to fit EIA standard 19 inch wide equipment racks; 0.09 inch thick aluminum; cabling terminated on Type 110 insulation displacement connectors; printed circuit board interface.
  - 1. Jacks: Non-keyed RJ-45, suitable for and complying with same standard as cable to be terminated; maximum 48 ports per standard width panel.
  - 2. Capacity: Provide ports sufficient for cables to be terminated plus 25 percent spare plus mounting space for all active components/equipment required to cross-connect to any/all modular jack ports on the patch panels.
  - 3. Labels: Factory installed laminated plastic nameplates above each port, numbered consecutively; comply with TIA/EIA-606 using encoded identifiers.
  - 4. Provide incoming cable strain relief and routing guides on back of panel.
  - 5. Patch Cords: Provide one patch cord for each pair of patch panel ports.
- C. Cable Management
  - 1. Equip each rack or cabinet with vertical cable section.
  - 2. Equip each rack or cabinet with horizontal cable managers above and below each patch section.
    - a. 7 rings
    - b. 6 pass-through holes
    - c. Hinged front cover
  - 3. Use velcro cable wraps on all cable - tie wraps are not acceptable.

## 2.06 ENCLOSURES

- A. Outlet Boxes: For flush mounting in walls; depth as required to accommodate cable manufacturer's recommended minimum conductor bend radius.
  - 1. Size, Unless Otherwise Indicated: 4 inches square by 2-1/8 inches deep.
  - 2. Faceplates: High impact thermoplastic, complying with system design standards and UL 514C.
  - 3. Labels: Comply with TIA/EIA-606 using encoded identifiers; label each jack on the face plate as to its function with a unique numerical identifier.

## PART 3 EXECUTION

### 3.01 INSTALLATION - GENERAL

- A. Comply with latest editions and addenda of TIA/EIA-568, TIA/EIA-569, ANSI/J-STD-607, NFPA 70, and SYSTEM DESIGN as specified in PART 2.

### 3.02 PATHWAYS

- A. Install with the following minimum clearances:
  - 1. 48 inches from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.
  - 2. 12 inches from power conduits and cables and panelboards.
  - 3. 5 inches from fluorescent and high frequency lighting fixtures.
  - 4. 6 inches from flues, hot water pipes, and steam pipes.
- B. Conduit:
  - 1. Stub 3/4" conduit into accessible ceiling space from telephone/computer network outlet box.
  - 2. Install three UTP cables from each telephone/data outlet to terminal board unless indicated otherwise on Drawings. Route conductors in bundled, tied groups.

3. Do not install more than 2 (two) 90 degree bends in a single horizontal cable run.
4. Install insulated bushings on all stubbed conduit ends.
5. Leave pull cords in place where cables are not initially installed.
6. Conceal conduit under floor slabs and within finished walls, ceilings, and floors except where specifically indicated to be exposed.
  - a. Conduit may remain exposed to view in mechanical rooms, electrical rooms, and telecommunications rooms.
  - b. Treat conduit in crawl spaces and under floor slabs as if exposed to view.
  - c. Where exposed to view, install parallel with or at right angles to ceilings, walls, and structural members.
  - d. Under floor slabs, locate conduit at 12 inches, minimum, below vapor retarder; seal penetrations of vapor retarder around conduit.

C. Grounding and Bonding: Perform in accordance with ANSI/J-STD-607 and NFPA 70.

### 3.03 INSTALLATION OF EQUIPMENT AND CABLING

- A. Cabling:
  1. Terminate cables at each outlet with specified modular jack assembly.
  2. Patch appropriate computer outlet locations to network switches as directed by the owner.
  3. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
  4. Do not over-cinch or crush cables.
  5. Do not exceed manufacturer's recommended cable pull tension.
  6. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.
- B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:
  1. At Distribution Frames: 120 inches.
  2. At Outlets - Copper: 12 inches.
- C. Copper Cabling:
  1. Category 5e/6: Maintain cable geometry; do not untwist more than 1/2 inch from point of termination.
  2. For 4-pair cables in conduit, do not exceed 25 pounds pull tension.
  3. Copper Cabling Not in Conduit: Use only type CMP plenum-rated cable as specified.
- D. Field-Installed Labels: Comply with TIA/EIA-606 using encoded identifiers.
  1. Cables: Install color coded labels on both ends.
  2. Outlets: Label each jack on its face plate as to its type and function, with a unique numerical identifier.
  3. Patch Panels: Label each jack as to its type and function, with a unique numerical identifier.
  4. Patch Cords: Label with jack identifier corresponding to initial installation.

### 3.04 TESTING

- A. Comply with inspection and testing requirements of specified installation standards.
- B. Visual Inspection:
  1. Inspect cable jackets for certification markings.
  2. Inspect cable terminations for color coded labels of proper type.
  3. Inspect outlet plates and patch panels for complete labels.
  4. Inspect patch cords for complete labels.
- C. Testing - Copper Cabling and Associated Equipment:
  1. Test operation of shorting bars in connection blocks.

2. Category 5e/6 Links: Perform tests for wire map, length, attenuation, NEXT, and propagation delay.
- D. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

**END OF SECTION**

## SECTION 28 3100

### FIRE DETECTION AND ALARM

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Fire alarm system design and installation, including all components, wiring, and conduit.
- B. Replacement and removal of existing fire alarm system components, wiring, and conduit indicated.

##### 1.02 SUBMITTALS

- A. See General Conditions - Administrative Requirements, for submittal procedures.
- B. Evidence of designer qualifications.
- C. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:
  - 1. Copy (if any) of list of data required by authority having jurisdiction.
  - 2. NFPA 72 "Record of Completion", filled out to the extent known at the time.
  - 3. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7-5-2.2(9), and complete listing of software required.
  - 4. System zone boundaries and interfaces to fire safety systems.
  - 5. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.
  - 6. Circuit layouts; number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
  - 7. List of all devices on each signaling line circuit, with spare capacity indicated.
  - 8. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.
  - 9. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.
  - 10. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
  - 11. Certification by the manufacturer of the control unit that the system design complies with the contract documents.
  - 12. Certification by Contractor that the system design complies with the contract documents.
  - 13. Do not show existing components to be removed.
- D. Evidence of installer qualifications.
- E. Inspection and Test Reports:
  - 1. Submit inspection and test plan prior to closeout demonstration.
  - 2. Submit documentation of satisfactory inspections and tests.
  - 3. Submit NFPA 72 "Inspection and Test Form," filled out.
- F. Project Record Documents: Have one set available during closeout demonstration:
  - 1. Complete set of floor plans showing actual installed locations of components, conduit, and zones.
  - 2. "As installed" wiring and schematic diagrams, with final terminal identifications.
  - 3. "As programmed" operating sequences, including control events by device, updated input/output chart, and voice messages by event.
- G. Closeout Documents:

1. Certification by manufacturer that the system has been installed in compliance with his installation requirements, is complete, and is in satisfactory operating condition.
2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.

### **1.03 QUALITY ASSURANCE**

- A. Designer Qualifications: NICET Level III or IV (3 or 4) certified fire alarm technician or registered fire protection engineer, employed by fire alarm control panel manufacturer, Contractor, or installer, with experience designing fire alarm systems in the jurisdictional area of the authorities having jurisdiction.
- B. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
  1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
  2. Installer Personnel: At least 2 years of experience installing fire alarm systems.
  3. Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.

### **1.04 EXTRA MATERIALS AND TOOLS**

- A. Provide spare parts of same manufacturer and model as those installed; deliver in original packaging, labeled in same manner as in operating and maintenance data.

### **1.05 WARRANTY**

- A. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Fire Alarm Control Units - Existing Control Unit is Simplex 4004.
- B. Initiating Devices, and Notification Appliances:
  1. SimplexGrinnell: [www.simplexgrinnell.com](http://www.simplexgrinnell.com).

### **2.02 FIRE ALARM SYSTEM**

- A. Fire Alarm System: Provide modifications and extensions to the existing automatic fire detection and alarm system:
  1. Provide all components necessary, regardless of whether shown in the contract documents or not.
  2. Protected Premises: Entire building shown on drawings.
  3. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
    - a. The Americans With Disabilities Act (ADA).
    - b. The requirements of the local authority having jurisdiction.
    - c. Applicable local codes.
    - d. The contract documents (drawings and specifications).
    - e. NFPA 101.
    - f. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
  4. Evacuation Alarm: Single smoke zone; general evacuation of entire premises.

5. Master Control Unit (Panel): Existing, located as shown on drawings.
- B. Circuits:
1. Initiating Device Circuits (IDC): Class A, Style D.
  2. Notification Appliance Circuits (NAC): Class A, Style Z.

### **2.03 EXISTING COMPONENTS**

- A. Clearly label components that are "Not In Service."
- B. Remove unused existing components and materials from site and dispose of properly.

### **2.04 COMPONENTS**

- A. General:
1. Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.
  2. Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.
- B. Notification Appliances:
1. Low Profile Horn-Strobes
    - a. Audible output of 92 dBA at 10 ft. when measured in reverberation room per UL-464.
    - b. Integrally mounted flashing light unit with block letters 'FIRE'. Multi-candela with field-selectable settings of 15cd, 30cd, 60cd, 75cd & 110cd, and flash rate between one and three Hertz. All units shall flash in synchronization with each other.
    - c. The horn shall have a selectable steady or synchronized temporal output.
    - d. In and out screw terminals shall be provided for wiring.
    - e. Low profile horn/strobes shall mount in a North American 1-gang box.
  2. Low Profile Strobes
    - a. Provide low profile wall mounted strobes at the locations shown on the drawings. In and out screw terminals shall be provided for wiring. Strobes shall provide synchronized flash outputs. Strobe output shall be determined as required by its specific location and application from a family of 15cd, 30cd, 60cd, 75cd, or 110cd devices. Low profile strobes shall mount in a North American 1-gang box.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and the contract documents.
- B. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.
- C. Install wiring in conduit raceway. Minimum raceway size shall be 3/4 inch. Fire alarm system conductors from different zones may be combined in common conduit. Make certain that raceway size and wire quantity, size, and type is suitable for equipment supplied and is within NEC standards.
- D. Label pull and junction boxes "FIRE ALARM" with red indelible ink.
- E. Loop wires through each device on zone for proper supervision. Tee-taps not permitted.
- F. Provide dust protection for installed smoke detectors until finish work is completed and building is ready for occupancy.
- G. Protect conductors from cuts, abrasion and other damage during construction.
- H. Minimum conductor size shall be 14 AWG unless otherwise specified.

- I. Do not install ceiling mounted detectors within 3 feet of air discharge grills. Coordinate with other trades as required.
- J. Post copy of wire identification list inside fire alarm panel door or other area accessible to fire alarm service personnel.
- K. Provide duct smoke detectors for all mechanical units with air flow in excess of 2000 cfm and tie into fire alarm control panel. Provide fan shut down circuit and associated control equipment for all required mechanical units.
- L. Install conductors and make connections to all fire/smoke dampers. Refer to mechanical drawings for exact number and locations.
- M. Obtain Owner's approval of locations of devices, before installation.
- N. Install instruction cards and labels.

### **3.02 INSPECTION AND TESTING FOR COMPLETION**

- A. Notify Owner 7 days prior to beginning completion inspections and tests.
- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
- G. Correct defective work, adjust for proper operation, and retest until entire system complies with contract documents.
- H. Diagnostic Period: After successful completion of inspections and tests, Operate system in normal mode for at least 14 days without any system or equipment malfunctions.
  - 1. Record all system operations and malfunctions.
  - 2. If a malfunction occurs, start diagnostic period over after correction of malfunction.
  - 3. Owner will provide attendant operator personnel during diagnostic period; schedule training to allow Owner personnel to perform normal duties.
  - 4. At end of successful diagnostic period, fill out and submit NFPA 72 "Inspection and Testing Form."

### **3.03 CLOSEOUT**

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
  - 1. Be prepared to conduct any of the required tests.
  - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
  - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
  - 4. Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
  - 5. Repeat demonstration until successful.

### **3.04 MAINTENANCE**

- A. Perform routine inspection, testing, and preventive maintenance required by NFPA 72, including:
  - 1. Maintenance of fire safety interface and supervisory devices connected to fire alarm system.
  - 2. Repairs required, unless due to improper use, accidents, or negligence beyond the control of the maintenance contractor.
  - 3. Record keeping required by NFPA 72 and authorities having jurisdiction.
- B. Provide trouble call-back service upon notification by Owner:
  - 1. Provide on-site response within 2 hours of notification.
  - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
  - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- C. Provide a complete description of preventive maintenance, systematic examination, adjustment, cleaning, inspection, and testing, with a detailed schedule.
- D. Maintain a log at each fire alarm control unit, listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced. Submit duplicate of each log entry to Owner's representative upon completion of site visit.
- E. Comply with Owner's requirements for access to facility and security.

**END OF SECTION**