

**PERMIT SET / BID DOCUMENTS**  
**PROJECT MANUAL**  
**DO LAB AND RESTROOM**  
**RENOVATIONS**

**FOR**  
**BOONSHOFT MUSEUM OF DISCOVERY**  
**2600 DEWEESE PARKWAY**  
**DAYTON, OHIO 45414**

JULY 2018

PREPARED BY

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**PROJECT MANUAL & SPECIFICATIONS**

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END OF SECTION

FORM OF PROPOSAL

TO: Mr. Doug Hull  
Boonshoft Museum of Discovery

Having carefully read and examined the Contract Documents for the Execution and Construction of the DOLAB AND RESTROOM RENOVATIONS and having inspected the premises and all the conditions affecting the work, the undersigned propose(s) to furnish all materials and perform all labor necessary to performance and completion of such item or items as are enumerated below, all to be in full accordance with the Bidding and Contract Documents; and further, agrees that if any or all of said bids be accepted, the undersigned will enter into a Contract according to the form required by the Owner for the faithful performance of labor and furnishing of material included in such bid or bids so accepted, and will furnish a good and sufficient Bond to the satisfaction of the Owner, in an amount equal to one hundred percent (100%) of the Contract Price for the faithful performance of such Contract as required by law and the Owner.

Addenda Received prior to submission of Bid:

Addendum Number(s): \_\_\_\_\_

Submitted by:

\_\_\_\_\_  
(Contracting Firm)

\_\_\_\_\_  
(Date)

Address of Firm: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Contacting Firm's Point of Contact for this Bid: \_\_\_\_\_

**BID ITEM NO. 1: COMPLETE CONTRACT - Base Bid Total Contract Proposal**

BID TOTAL, for the sum of:

\_\_\_\_\_ (Dollars)                      \$ \_\_\_\_\_

**SUBSTITUTION LIST**

All Bids shall be based upon the STANDARD specified or their EQUALS. Bidders desiring to make Substitutions for "STANDARD" specified or different methods of construction shall list the proposed Substitution or Methods below, together with the Base Bid:

Brand, Make or Method Specified	Proposed Substitution	Add	Deduct	No Change

**TIME OF COMPLETION**

I, or we, agree to complete the work covered by the Proposal, on or before the date required by the Contract Documents

**BID BONDS**

NOT REQUIRED



THE BIDDER IS:

1. An individually owned firm and the Owner is:

\_\_\_\_\_

2. A Partnership of the State of \_\_\_\_\_, and the partners are:

\_\_\_\_\_

3. A Corporation of the State of Ohio:  
State Name and Address of all persons and parties interested in the foregoing Proposal other than  
the Bidder:

\_\_\_\_\_

\_\_\_\_\_

AGREEMENT

The Contractor agrees to accept the Award of Contract any time within sixty (60) days after Bids are received.

BIDDER: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

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

ADDRESS: \_\_\_\_\_

END OF SECTION

**DELINQUENT PERSONAL PROPERTY TAXES**

TO:

I submitted a bid to \_\_\_\_\_ on \_\_\_\_\_, 20\_\_\_, and having been awarded the contract described as (Insert contract number or a brief description of the work or service to be performed), submit statement to comply with the requirement of Section 5719.042, Ohio Revised Code.

NOTE: If paragraph No. 1 below is applicable, the bidder should sign in the space provided at the end of the paragraph, and then cross out paragraph No. 2.

If paragraph No. 2 below is applicable, the bidder should insert the requested information and then cross out paragraph No. 1.

No. 1: At the time I submitted my bid I was not charged with any delinquent personal property taxes on any general tax list.

\_\_\_\_\_  
NAME OF FIRM  
\_\_\_\_\_  
Signature of Officer (Title)

No. 2: At the time I submitted my bid I was charged with delinquent personal property taxes, penalties and interest as follows:

\$ \_\_\_\_\_ Delinquent Taxes  
\$ \_\_\_\_\_ Penalties  
\$ \_\_\_\_\_ Interest

\_\_\_\_\_  
NAME OF FIRM  
\_\_\_\_\_  
Signature of Officer (Title)

State of Ohio  
County of \_\_\_\_\_ SS:

\_\_\_\_\_, being first duly sworn, says that the statements made above are true as he/she verily believes.

Sworn to before me and subscribed in my presence this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_.

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

**NON-COLLUSION AFFIDAVIT**

State of Ohio, County of \_\_\_\_\_.

The Bidder and each person signing on behalf of the Bidder certifies, and in the case of a joint bid, each party thereto certifies as to such party's organization, under penalty of perjury, that to the best of the undersigned's knowledge and belief.

1. The Base Bid, Unit Prices or any Alternate bid in the bid have been arrived at independently without collusion, consultation, communication or agreement, for the purposes of restricting competition as to any matter relating to such Base Bid, Unit Prices, or Alternate bid with any other Bidder.
2. Unless otherwise required by law, the Base Bid, Unit Prices or Alternate bid which have been quoted in the bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to the bid opening, directly or indirectly, to any other bidder that would have any interest in the Base Bid, Unit Prices, or Alternate Bid.
3. No attempt has been made or will be made by the Bidder to induce any other individual, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

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

Print Name: \_\_\_\_\_

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

Company Name: \_\_\_\_\_

**ADDITIONAL SIGNATURE FOR JOINT VENTURE**

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

Print Name: \_\_\_\_\_

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

Company Name: \_\_\_\_\_

State of Ohio, County of \_\_\_\_\_ ss.

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

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

GENERAL CONDITIONS OF THE CONTRACT

The General Conditions of the Contract for Construction, AIA Document A201-2007 Edition of the American Institute of Architects, may not accompany each set of Specifications, but are hereby made a part of this Specification, and shall be considered binding and become a part of the Contract.

Copies of these General Conditions are on file at the office of the Architect may be obtained if requested.

END OF SECTION

SECTION 1A - SUPPLEMENTARY GENERAL CONDITIONS

1. SCOPE

Except as modified by other parts of the Contract Documents, The original provisions of "General Conditions of the Contract for Construction," AIA Document A201, 2007 Edition, shall remain in full effect. The following Supplementary General Conditions shall be considered as additions or modifications to the original provisions.

2. DOCUMENTS REQUIRED PRIOR TO SIGNING OF CONTRACT

Immediately upon the award of, and prior to the signing of the contract, the successful Bidder shall furnish to the Architect:

- A. If Contractor's Proposal is secured by a means other than a Bid Guarantee and Contract Bond, a Bond meeting the requirements of Ohio Revised Code Chapter 153. Said Bond shall:
  - 1. Be written for an amount not less than 100% of the Contract Amount.
  - 2. Be accompanied by a Power of Attorney of the Agent of the Company signing the same, showing that said agent is authorized to execute a bond in a sum sufficient to cover the amount of the bond.
  - 3. Be accompanied by a certificate signed by the Superintendent of Division of Insurance, State of Ohio, showing that said company is authorized to do business in Ohio.
- B. A signed and notarized copy of a "Delinquent Personal Property Tax Statement" for the Contractor per the requirements of Ohio Revised Code Section 5719.042.
- C. Certificates of Insurance Coverage for all insurance coverage required of the Contractor by the Contract Documents.
- D. Workman's Compensation Certificates.
- E. Complete list of Subcontractors and material and equipment suppliers with a complete listing of all segments of the Work each Subcontractor and material and equipment supplier shall be used for.
- F. The full name, address and phone number, including residential phone number, of the Job Superintendent for Contractor and major Subcontractor, who will be in charge during the entire duration of the project.
- G. Schedules of Values (Division of Contract). The schedule of values cost breakdowns shall follow the Construction Specification Institute (CSI) division of work/sequence. In addition to the CSI cost breakdown listing, the following additional cost breakdowns are required:

Bond & Insurance  
Site Mobilization  
General Conditions  
Scheduling and Coordination of work

Field Supervision  
Punchlist  
Project Closeout Items

All costs shall indicate the labor and material cost associated with each items noted on the cost breakdown.

- H. Time-progress schedule of the Work. The General Trades Contractor shall develop and maintain the overall project schedule for the work. Each Prime Contractor shall submit a submittal schedule to the Prime Contractor for review.

### 3. CONTRACT DOCUMENTS

- A. Contract documents as indicated in Paragraph 1.1.1 of the General Conditions, shall be modified to include the following documents:

1. Drawing sheets
2. General Conditions (AIA Document A201-2007)
3. Supplementary General Conditions.
4. Additional Conditions
5. General Requirements (Division 1).
6. Owner/Contractor Agreement (AIA A101-2007)
7. Bid Guaranty and Contract Bond
8. Specifications
9. Addenda, as issued prior to the receipt of Bids.

- B. Drawings and Specifications

1. The successful contractor(s) will be furnished PDF files of the drawings and specifications which will include all bid addendum and code review items.
2. Contractor shall keep one (1) complete clean copy of all drawings and specifications for the work, in good shape, available to everyone engaged on the job, see Paragraph 3.11 of the AIA Document A201-2007. In addition one (1) complete copy of all Drawings and Specifications shall be maintained to record all changes made during the execution of the Work.
3. The Drawings are divided by category and the Specifications are divided into Divisions and Section for the purpose of providing order to the many elements of the work. The Contractor is responsible for a complete familiarity of all of the Contract Documents and the complete understanding of the Scope of responsibility of the Contractor's work. The Contractor is also responsible to establish the Scope of any subcontractor's work; the division of the Construction Documents is not intended to establish such divisions of responsibility.
4. Unless specifically indicated otherwise, all elements of the Work shall produce a complete installation. Contractor is responsible to provide the materials, labor and services necessary to produce a complete installation regardless of the inclusion of all necessary components of the installation in the Contract Documents.

5. In event of inconsistencies within or between the Contract Documents, the Contractor shall provide the better quality or greater quantity of Work, and shall comply with the more strict requirement.
6. Contractor shall be responsible to field verify all existing conditions. Any deviations found between the existing conditions and the Contract Documents, including dimensions, that affect the Work in any way shall be brought to the attention of the Architect immediately. 3.2.3 of the General Conditions (AIA Document A201-2007) is modified such that the Contractor shall be responsible for any corrective Work required as a result of failure to obtain guidance from the Architect for such deviations between existing conditions and the Contract Documents.
7. The Contractor shall only forward a "Request for Information" to the Architect for elements of the Work where there is reason to believe there are errors, inconsistencies or omissions in the Contract Documents or there is reason to believe that there are deviations between existing conditions and requirements of Work represented in the Contract Documents. Requests for consideration of a substitute product or consideration of a product as an "equal" shall not be submitted as a Request for Information; such request shall be submitted under the conditions prescribed in the Specifications for Submittals. See Specification Section 1B-Additional Conditions for requirements associated with "Request for Information".

#### 4. INSURANCE

- A. The Contractor shall furnish and maintain insurance as follows, in accordance with Article 11 of the AIA General Conditions, except as modified herein.
- B. All policies shall be subject to the approval of the Owner.
- C. The Owner shall be listed as co-insured on all policies.
- D. The form and adequacy of Protective Liability Insurance shall be written, unless otherwise provided with minimum limits of \$2,000,000 for injury to one (1) person and \$2,000,000 limit for total injury in any one occurrence and the minimum for property damage in policies shall be \$2,000,000 in each case. Vehicles operated in connection with the project shall be included in the coverage. Coverage shall be written on the Comprehensive Form.
- E. The Contractor shall furnish and maintain a Builder's All Risk Policy in the amount of the Contract.
- F. Certificate of all required insurance shall be filed with the Architect prior to signing the Contract.

5. PERMITS

- A. Building and zoning permits required for construction shall be obtained and paid for by the Owner. The Owner will submit drawings and specifications to the governing authorities.
- B. Any other permits required will be obtained and paid for by the Contractor.
- C. All permits shall remain in full force for the period necessary to complete work under this Contract.

6. NOTICE OF COMMENCEMENT

- A. Pursuant to Section 1311.252, Ohio Revised Code, the Owner shall prepare a Notice of Commencement in affidavit form identifying the name and address of the Owner, the Project number, the name, address and trade of all Contractors, the date of execution of the Contracts, and the name and address of the Surety for each Contract, in addition to the name and address of the Owner's representative upon whom a Claim Affidavit may be served.
- B. The Notice of Commencement shall be made available upon request. The unavailability of a Notice of Commencement or incorrect information in the Notice of Commencement does not adversely affect the right of claimants, pursuant to Section 1311.252 (C), Ohio Revised Code.

7. JOB CONDITIONS

- A. The commencement of work by any Contractor or Subcontractor shall indicate his acceptance of all surfaces that his work will adjoin or cover, and of all job conditions. Each Contractor and Subcontractor shall be responsible for the satisfactory installations of his own work, regardless of contributory causes, once he has accepted job conditions. Any necessary corrections to said surfaces shall be reported immediately to the Architect prior to commencement of said work.

8. CONTRACTOR'S SUPERINTENDENT

- A. Contractor shall keep the same competent superintendent and any necessary assistants, on the work during its progress. All shall be satisfactory to the Architect.
- B. Superintendent shall have previous experience in this type of work and shall maintain progress schedule and be authorized to make field decisions in the absence of the Contractor. He shall not be required to perform work not related to administering, expediting or coordinating the work under this Contract.
- C. The Contractor shall attend to every part of the work personally, or through his competent foremen, who shall be constantly on the work, shall lay it out and give all necessary lines, levels, patterns and dimensions according to the accompanying drawings and these Specifications, and shall verify that Drawings and Specifications are observed by all Subcontractors and employees.
- D. The Contractor shall inspect all materials when delivered and see that it is properly stored and protected from damage until used and must keep himself familiar with the working drawings, scale and full size details and Specifications concerning all parts of the work at all



times, and must report to the Architect for correction of apparent errors, either in the drawings or specifications, as soon as discovered.

9. MATERIALS AND WORKMANSHIP

- A. The Architect or authorized representatives shall have the right to reject work and materials not in accordance with the true intent and meaning of the Drawings and Specifications.
- B. Contractor shall accept responsibility for any changes or deviations from the Drawings and Specifications made without authorization from the Architect.

10. MANUFACTURER'S DIRECTION

- A. All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, adjusted and conditioned as directed by the manufacturer, unless herein specified to the contrary.

11. REVISIONS AND EXTRAS

- A. Contractor will accept orders for extra work or make changes in this Contract as per provisions of the General Conditions.
- B. If satisfactory resolution is not reached in Item "A" above, then all extra work or changes in the work shall be paid for on the basis of 10% in addition to the actual cost of labor as submitted by the Contractor and 10% on materials in accordance with suppliers' invoices. Contractor mark-up on sub-contractors is limited to 10%.

12. RELEASE OF LIENS

- A. Lien laws of the State of Ohio shall govern all work and materials.
- B. Contractor shall furnish the Owner with each estimate for payment and before final payment is made, a full Release of Lien signed by all Subcontractors and Material-men associated in any way with the work.
- C. If any Subcontractor refuses to furnish a release or receipt in full, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against any lien.
- D. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all the monies that the latter may have been compelled to pay in discharging such lien including all costs and a reasonable Attorney's fee.

13. PAYMENT TO CONTRACTOR

- A. Payment to the Contractor will be made in accordance with the General Conditions.
- B. At the end of each calendar month, the Contractor shall prepare and present to the Architect an estimate of work completed and materials which have been delivered on the site or secured for the job and stored during such month or subsequent to making of the last preceding estimate. Estimate forms will be AIA Documents G702 and G702A, Application and Certificate for Payment.

- C. Until all work is completed, the Owner shall make partial payments to the Contractor based on estimates prepared by the Contractor and approved by the Architect. These partial payments shall be governed by the following:
1. Partial payments to the Contractor for labor performed shall be made at the rate of ninety-two percent of the approved estimates until the work of the Contract has achieved fifty percent completion. All payments for labor performed after the work of the Contractor has achieved fifty percent completion shall be paid based on one hundred percent of the approved estimates.
  2. Partial payments to the Contractor for materials shall be made at the rate of ninety-two percent of the approved estimates for materials delivered to the job site but not incorporated into the work. Once the materials are incorporated into the work, they shall be paid at one hundred percent of the approved percentage completion. All payments for materials delivered after the work of the Contractor has achieved fifty percent completion shall be paid based on one hundred percent of the approved estimates.
  3. The balance of labor estimates retained by Owner in 1, above, shall not be paid to the Contractor until the work of the Contractor meets the condition of Final Completion.
  4. The balance of material estimates retained by Owner in 2, above, shall not be paid until all materials required by the Work have been properly installed by the Contractor.
- D. All materials and work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and Work upon which payments have been made or the restoration of any damaged Work, or as a waiver of the right of the Owner to require the fulfillment of all the terms of the Contract.
- E. Monthly estimates shall be proportioned to the Division of Contract. (Schedule of Values) prepared by the Contractor and approved by the Owner. Such monthly estimates shall be adjusted proportionately by item to agree with the total amount of the Contract
- F. Partial payments made as the work progresses shall in no way be construed as acceptance of any portion of the completed work embraced in the Contract.

#### 14. DEFINITIONS

- A. "Provide" - means furnish, fabricate, complete, deliver, install and erect, including labor, materials, equipment, apparatus, appurtenances extra expenses necessary to complete in place, ready for operation and/or use under the terms of the Contract Documents.
- B. "As Shown" - "As Indicated" - "As Detailed" - "As Noted" or words of similar import refer to Contract Drawings accompanying Specifications.
- C. "As Directed" - "As Ordered" - "As Designated" - "As Required" or words of similar import refer to the Architect's instruction.

- D. "Approved" - "Acceptable" - "Satisfactory" - or words of similar import refer to approved by, acceptable, or satisfactory to the Architect based on the best professional judgment of the Architect upon his review of conditions, data, and other information made available to him, but does not relieve the Contractor from his obligations and responsibilities as delineated in the Contract Documents.

15. ASSIGNMENT

- A. Assignment of this Contract or any part thereof, or any funds to be received thereunder, by the Contractor will be subject to the approval of the Owner. Such assignment shall contain a clause to the effect that it is agreed the funds to be paid the assignee under this assignment, are subject to the prior lien for services rendered or materials supplied for the performance of the work called for in said Contract in favor of all persons, firms and corporation, rendering such services or supplying such materials.

16. GUARANTEE

- A. For a period of one (1) year from the date of Substantial Completion by the Owner, all Contractors unconditionally shall warrant all material, equipment, design and workmanship to be free from inherent defects, and warrants against any malfunction caused thereby. Contractor shall at his own expense, cause all defects discovered during period to be removed, repaired and/or replaced to the complete satisfaction of the Owner.
- B. The Owner shall notify the Contractor in writing stating such defects and repairs to be made and the Contractor agrees to remedy such defects and make such repairs as directed by the Owner and to start the work not more than five (5) days from date of said notification. If the Contractor fails to make such repairs within five (5) days of said notification. Owner may cause said repairs to be made and charge said expenses to the Contractor.
- C. This guarantee shall not serve to reduce any otherwise longer guarantees and warranty periods under which any units or components are regularly sold, or which require longer guarantees under the Specifications.
- D. Contractor shall be responsible for making corrections of any Work found to be not in conformance with the Contract Documents regardless of when discovery of such non-conformance is discovered.

17. CODE COMPLIANCE

- A. The Contractor shall give all requisite notices to the proper authorities, obtain all official inspections, permits (except for permits specifically specified as the responsibility of the Owner) and licenses made necessary by the work and shall comply with all laws, ordinances, rules and regulations pertaining thereto.

18. WAGES

- A. Per the Ohio Revised Code, as a project for a Public School District, Prevailing Wages need not be paid.
- B. Contractor, when requested by the School District, shall be required to fill out a Prevailing Wage Exemption Survey Contractor Estimate Form.

19. OHIO SALES TAX EXEMPTION:

- A. As a public body, the Owner has a sales tax exemption status, and Work performed for this Project is exempt of such tax. Owner shall furnish Contractor proper sales tax exemption certification for use by the Contractor to avoid the need to make sales tax payments for materials, services and equipment related to the Work.

END OF SECTION

SECTION 1B - ADDITIONAL CONDITIONS

1. GENERAL

The following shall supplement the General and Supplementary Conditions of the Contract.

2. LAYOUT AND SURVEY

A. The Contractor shall, from bench marks available at the site, verify all lines, levels and dimensions as shown on the Drawings, and shall report promptly any errors or inconsistencies to the Architect before commencing work. The Contractor shall be responsible for the proper location and level of all work.

3. MEASUREMENTS

A. Before ordering any materials or doing any work, the Contractor shall verify all measurements at the site of the work and shall be responsible for the corrections of the same. Any discrepancies which may be found shall be promptly reported to the Architect for consideration before proceeding with the work.

4. ELECTRONIC FILES OF THE CONSTRUCTION DOCUMENTS

A. The Architect, at his sole discretion and without obligation, can make graphics portions of the contract documents available for use by the Contractor in electronic format upon request and completion of a Waiver Agreement and review fees payable to the Architect.

B. Electronic files shall be provided only after bids have been received for the project and contracts have been signed with the contractors.

C. The electronic file formats provided by the Architect to the Contractor shall be as follows:

CADD Drawing Files: AutoCAD 2010  
Word Processing Files: Microsoft Word 2007  
Spreadsheet Files: Microsoft Excel 2007

D. The Waiver Agreement provided by the Architect must be signed by the contractor making the request for the electronic files indicating the following conditions for the release of the electronic files.

1. The Contractor requesting these drawings solely for the purpose of coordinating and expediting the contractor's work on this specific project and for no other purpose.
2. The files on these diskettes are not Contract Drawings; they are work product tools used to produce the Contract Drawings. As such, they may contain information that may or may not be consistent with the Contract Drawings.
3. Ownership of the information to be provided to you as herein set forth is and shall remain the sole and exclusive property of the Architect.
4. The Architect makes no representation or warranty, expressed or implied, as to the quality or content of the information of these files.

5. CONTRACTOR ACCESS TO THE SITE

- A. All construction activity including storage of materials and employee parking, access to construction site, etc., shall be limited to the area of construction outline in the Site Logistics Plan(s).
- B. Contractor shall verify with the Owner the location of, and area available for the storage of material and tools, and the placement of the construction office and temporary storage. The Contractor shall clean up and restore such area, surfaced or unsurfaced, to their original conditions upon completion of the work.

6. CUTTING AND PATCHING

- A. Contractor shall provide openings, penetrations including cutting and patching as required to complete their installation by craftsmen skilled in that type of work:
- B. Cutting, when necessary shall be done with such tools and methods to prevent unnecessary damage to surrounding areas or equipment. No cutting shall be done which will in any way reduce the structural strength of the building. Should such cutting be necessary, consult the Architect and do not proceed with such operation unless the Architect's approval is given.
- C. Wherever existing walls, floors, ceilings, beams, etc., are cut, exposed cut surfaces must be neatly finished by patching, filling, etc., as required to the satisfaction of the Architect, or covered with Architect approved finish materials, such as metal and wood trim, adequately fastened and aligned.

7. PROTECTION OF EXISTING FACILITIES

- A. Extreme care shall be taken to properly protect all existing items to remain.
- B. Properly protect all components and surfaces of the existing structures.
- C. All existing items and surfaces damage during the work are to be repaired/replaced as required to equal or better condition than previously existed.

8. ASBESTOS CONTAINING BUILDING MATERIALS:

- A. The Owner shall make the Contractor aware of all suspect and confirmed asbestos containing building materials present at the project site as have been identified per the requirements of the Asbestos Hazard Emergency Response Act.
- B. Contractor shall be responsible to inform each of his employees and subcontractors of the location of asbestos containing building materials and require his subcontractors to do the same.
- C. Any Work associated with existing roofs may involve cutting or removal of asbestos containing roof felts and/or flashing membrane. Contractor shall use only craftsmen meeting

governing agency requirements for training to perform such Work. In addition all Work of this nature shall conform with prevailing regulations.

9. COMPLETION DATES

- A. The required dates of Substantial Completion and Final Completion are identified in Specification Section 01 01 00 – Summary of Work.

10. LIQUIDATED DAMAGES

- A. If Contractor fails to achieve Substantial Completion and Final Completion by the required dates, the Contractor shall be assessed liquidated damages.
- B. The Architect, based on his best professional judgment, shall determine the liability the contractor shall incur, if any, for liquidated damages based on the performance and/or failure to perform by Contractor.
- C. The maximum daily amount Contractor shall be held liable for liquidated damages shall be determined based on the Contract Amount of the Contractor as follows:

<u>Contract Amount</u>	<u>Dollars per day</u>
\$1.00 - \$50,000.00	\$150.00
\$50,001.00 - \$150,000.00	\$250.00
\$150,001.00 - \$500,000.00	\$500.00
\$500,001.00 - \$2,000,000.00	\$1,000.00
\$2,000,001.00 - \$5,000,000.00	\$2,000.00
\$5,000,001.00 - \$10,000,000.00	\$2,500.00
\$10,000,001.00 and more	\$3,000.00

- D. Contractor liability to the Owner for Liquidated Damages shall entitle the Owner to retain from the amount owed the Contractor and/or recover from the Contractor Liquidated Damages, and not as penalty, amounts as set forth above for each and every calendar day thereafter until the condition causing the Liquidated Damages has been corrected. The Contractor acknowledges by submitting its bid and entering into a contract with Owner, that such amounts of Liquidated Damages represent a reasonable estimate of the actual damages that the Owner would incur if the work is not substantially and finally completed by the foregoing dates. These Liquidated Damages are damages for loss of use of the project. The Owner's right to recover Liquidated Damages shall not substitute for any other right of recovery for additional costs incurred should the Contractor fail to complete the Contract according to the Contract Documents.

11. REQUESTS FOR INFORMATION (RFI's)

- A. In the event that the contractor or subcontractor, at any tier, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation by the Construction Manager, the contractor shall submit a ***Request for Information*** in writing to the Architect. Requests for Information may only be submitted by the contractor and shall only be submitted on the Request for Information form provided by the Architect. The contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Architect. In the Request for Information, the contractor shall set forth an interpretation or understanding of the requirements along with reasons why such an understanding was reached.
- B. The Architect acknowledge that it is a complex project. Based upon the Architect's past experiences with projects of similar complexity, the Architect anticipate that there will probably be some Requests for Information on this project.
- C. The Architect will review all Requests for Information to determine whether they are Request for Information within the meaning of the term. If the Architect determines that the document is not a Request for Information, it will be returned to the contractor, un-reviewed as to content, for re-submittal on the proper form and in the proper manner.
- D. Responses to Requests for Information shall be issued within two (2) working days of receipt of the request from the contractor unless the Architect determine that a longer time is necessary to provide an adequate response. If a longer time is necessary by the Architect, the Architect will, within two (2) working days of receipt of the request, notify the contractor of the anticipated response time. If the contractor submits a Request for Information on an activity with two (2) working days or less of float on the current project schedule, the contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request provided that the Architect responds within the two (2) working days set forth above.
- E. Responses from the Architect will not change any requirement of the contract documents. In the event the contractor believes that a response to a Request for Information will cause a change to the requirements of the contract documents, the contractor shall immediately give written notice to the Architect stating that the contractor considers the response to be a Change Order. Failure to give such written notice immediately shall waive the contractor's right to seek additional time or cost under the appropriate articles of the General Conditions.
- F. Copy of the RFI Form will be distributed at the Pre-Construction Meeting.

END OF SECTION



SECTION 010100 - SUMMARY OF WORK

PART 1 - GENERAL

1. DESCRIPTION

- A. The project consists the construction of renovation of four group restrooms and the do lab area.
- B. Restrooms – new finishes, partitions and limited fixture replacements
- C. DoLab – new finishes, laboratory casework and accessories, relocated fume hood and associated lab services.

2. WORK BY OTHERS

- A. Other construction activities may be occurring on each of the sites that may need to be coordinated.

3. COMPLETION DATES AND CONSTRUCTION SCHEDULE

A. COMPLETION DATES

- 1. The intent of the schedule is to work with the low bidder on schedule durations. It is anticipated that each restroom will take 2-4 weeks to complete. Contractor is to assume that all restrooms cannot be shut down at one time. It may be permissible to close each floor's restrooms at once.
- 2. The DoLab and associated renovations are anticipated to take up to 4 weeks for renovation.
- 3. For all areas of work it is anticipated that work will not start until January 2019. Final scheduling will be coordinated between owner and contractor to work around schedules for special events and closing requirements.

B. CONSTRUCTION SCHEDULE

- 1. The Contractor shall order all equipment and materials associated with the work in order to be completed by the substantial completion date listed above.
- 2. Access to all emergency egress and exits shall be maintained at all times throughout the project.
- 3. The project area will be available to the Contractors during the holiday breaks with prior approval of the Owner.
- 4. The Contractor, at their option and at no additional cost to the Owner, may work on Saturdays and Sundays with prior approval of the Owner.

END OF SECTION

SECTION 013100 - PROGRESS SCHEDULE

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

- A. Procedures for preparation and submittal of construction progress schedules and periodical updating.
- B. Contractors other than the General Contractor shall furnish, in a timely manner, detailed information required for preparation of the progress schedule by the General Contractor.

3. RELATED REQUIREMENTS

- A. Specified elsewhere:
  - 1. Section 013400 - Shop Drawing, Product Data and Samples.

4. FORMAT

- A. Prepare schedules as a horizontal bar chart with separate bar for each major portion of work or operation, identifying first workday of each week.
- B. Sequence of Listings: The Table of Contents of project manual.
- C. Scale and Spacing: To provide space for notations and revisions.
- D. Sheet Size: Minimum 11" x 17"

5. CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction. Indicate delivery dates for material and equipment critical to the progress of the work.
- B. Identify each item by major specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules for each stage of work.
- E. Provide sub-schedules to define critical portions of entire schedule.
- F. Show accumulated percentage of completion of each item and total percentage of work complete, as of the first day of each month.

- G. Provide separate schedule of submittal dates for shop drawings, product data, and samples and dates reviewed submittals will be required from Architect. Show decision dates for selection of finishes.

6. REVISIONS TO SCHEDULES

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

7. SUBMITTALS

- A. Submit initial schedules within 15 days after date of Owner-Contractor Agreement. After review, resubmit required revised data within ten days.
- B. Submit revised Progress Schedule with each Application for Payment.
- C. Submit the number of opaque reproductions which Contractor requires, plus 3 copies which will be retained by Architect. Submit under transmittal letter.

8. DISTRIBUTION

- A. Distribute copies of review schedules to job site file, subcontractors, other contractors, suppliers and other concerned entities.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SECTION 013400 - SHOP DRAWINGS, PRODUCT DATA & SAMPLES

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

A. Procedures for submittals.

3. RELATED REQUIREMENTS

A. Specified elsewhere:

1. General Conditions: Definitions and basic responsibilities of entities.
2. Section 017000 - Project Close-Out

4. SHOP DRAWINGS

- A. Present in a clear and thorough manner. Title each drawing with project and contract name and number; identify each element of drawings by reference to sheet number and detail, schedule or room number of Contract Documents.
- B. Identify field dimensions, show relation to adjacent or critical features of work or products.
- C. Minimum Sheet Size: 11" x 17" or multiples of 8-1/2" x 11".
- D. Reproduction of Contract Documents are not acceptable as shop drawings.

5. PRODUCT DATA

- A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics and capacities, wiring and piping diagrams and controls, component parts, finishes, dimensions and required clearances.
- B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to work. Delete information not applicable.

6. SAMPLES

- A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures and patterns for Architect selection.
- B. Submit samples to illustrate functional characteristics of products, including parts and attachments.

- C. Approved samples which may be used in the work area indicated in specification sections.
- D. Label each sample with identification required for transmittal letter.
- E. Provide field samples of finishes at project, at location acceptable to Architect, as required by individual specification sections. Install each sample complete and finished. Acceptable finishes in place may be retained in completed work.
- F. Submit for approval two (2) samples, or as otherwise required by the specifications.

7. MANUFACTURER'S INSTRUCTIONS

- A. Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing and finishing.

8. CONTRACTOR REVIEW

- A. Review submittals prior to transmittal, determined and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of contract documents.
- B. Coordinate submittals with requirements of work and of contract documents.
- C. Sign or initial each sheet of shop drawings and product data and each sample label to certify compliance with requirements of contract documents. Notify Architect in writing at time of submittals, of deviations from requirements of contract documents.
- D. Do not fabricate products or begin work which requires submittals until return of submittal with Architect acceptance.

9. SUBMITTALS REQUIREMENTS

- A. Transmit submittals in accord with approved Progress Schedule.
- B. Use architect provided cover sheet for each submittal – fill out the form entirely.
- C. Apply Contractor's stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of work and contract documents.
- D. Coordinate submittals into logical groupings to facilitate interrelation of several items:
  - 1. Finishes which involve Architect selection of colors, textures or patterns.
  - 2. Associated items which require correlation for efficient function or for installation.
- E. Original submission of shop drawings as required by the contract shall be in the form of one set of reproducible transparencies, such as ozalid, sepias and one set of prints. Standard mass produced items may be catalog cuts of which Contractor has had a reproducible transparency prepared, except in the instance of items especially adapted for this project.

- F. Submit number of samples specified in individual specification sections.
- G. Submit under Architect accepted form transmittal letter. Identify project by title and number, identify contract by number. Identify work and product by specifications section and article number.
- H. Contractor shall submit 2 copies of submittals to Owner at the same time the original submission is made to Architect.
- I. During the checking of shop drawings, phone conversations with Contractors, etc., if any revisions are being made to the contract documents, make a written record for all revisions to the drawings/specifications (for Record Drawings/Record Addendum), note the revisions in red, on the stick set of drawings/specifications and file the written record in the "Record Drawing and Record Addendum" section of the job notebook.

10. RESUBMITTALS

- A. Make resubmittals in accordance with requirements for initial submittals, clearly identify changes made since previous submittal.

11. DISTRIBUTION

- A. Duplicate and distribute reproductions of shop drawings, copies of product data and samples, which bear Architect stamp of approval, to job site file, Record Documents file, subcontractors, suppliers, other affected Contractors, and other entities requiring information.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SECTION 016100 - TRANSPORTATION AND HANDLING

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

- A. Packaging, transportation.
- B. Delivery and receiving.
- C. Product handling.

3. RELATED REQUIREMENTS

- A. Specified elsewhere:
  - 1. Section 013100 - Progress Schedules
  - 2. Section 013400 - Shop Drawings, Product Data and Samples
  - 3. Section 016200 - Storage and Protection
  - 4. Individual Sections - Specific requirements for packaging, shipping and handling.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

1. PACKAGING, TRANSPORTATION

- A. Require supplier to package products in boxes or crates for protection during shipment, handling and storage. Protect sensitive products against exposure to elements and moisture.
- B. Protect sensitive equipment and finishes against impact, abrasion and other damage.

2. DELIVERY AND RECEIVING

- A. Arrange deliveries of products in accord with construction progress schedules. Allow time for inspection prior to installation.
- B. Coordinate deliveries to avoid conflict with work and conditions at site, work of other Contractors, limitations on storage space, availability of personnel handling equipment and Owner's use of premises.
- C. Deliver products in undamaged, dry condition, in original unopened containers or packaging with identifying labels intact and legible.

- D. Clearly mark partial deliveries of component parts of equipment to identify equipment and content to permit easy accumulation of parts to facilitate assembly.
- E. Immediately on deliver, inspect shipment to assure:
  - 1. Product complies with requirements of contract documents and reviewed submittals.
  - 2. Quantities are correct.
  - 3. Accessories and installation hardware are correct.
  - 4. Containers and packages are intact and labels legible.
  - 5. Products are protected and undamaged.

3. PRODUCT HANDLING

- A. Provide equipment and personnel to handle products, by methods to prevent soiling and damage.
- B. Provide additional protection during handling to prevent marring and otherwise damaging products, packaging and surrounding surfaces.
- C. Handle product by methods to avoid bending or overstressing. Lift large and heavy components only at designated lift points.

END OF SECTION



SECTION 016200 - STORAGE AND PROTECTION

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

- A. Storage, general.
- B. Enclosed storage.
- C. Exterior storage.
- D. Maintenance of storage.

3. RELATED REQUIREMENTS

- A. Specified elsewhere:
  - 1. Section 016100 - Transportation & Handling
  - 2. Section 017000 - Project Close-Out

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

1. STORAGE, GENERAL

- A. Store products, immediately on delivery, in accordance with manufacturer's instructions, with seals and labels intact. Protect until installed.
- B. Arrange storage in a manner to provide access for maintenance of stored items and for inspection.

2. ENCLOSED STORAGE

- A. Store products, subject to damage by the elements, in substantial weathertight enclosures.
- B. Maintain temperature and humidity within ranges stated in manufacturer's instructions.
- C. Provide humidity control and ventilation for sensitive products required by manufacturer's instructions.
- D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

3. EXTERIOR STORAGE

- A. Provide substantial platforms, blocking or skids, to support fabricated products above ground; slope to provide drainage. Protect products from soiling and staining.
- B. For products subject to discoloration or deterioration from exposure to the elements, cover with impervious sheet material. Provide ventilation to avoid condensation.
- C. Provide surface drainage to prevent erosion and ponding of water.
- D. Prevent mixing of refuse or chemically injurious materials or liquids.

4. MAINTENANCE OF STORAGE

- A. Periodically inspect stored products on a scheduled basis.
- B. Verify that storage facilities comply with manufacturer's product storage requirements.
- C. Verify that manufacturer required environmental conditions are maintained continually.
- D. Verify that surfaces of products exposed to the elements are not adversely affected; that any weathering of finishes is acceptable under requirements of contract documents.

END OF SECTION

SECTION 017000 - PROJECT CLOSE OUT

1. RELATED DOCUMENTS

- A. All provisions of the Contract Documents apply to this section. The Contractor(s) shall be responsible for complete familiarity with same.

2. SCOPE

- A. Each Contractor shall furnish guarantees, warranties, bonds and release of liens to the Architect, as required under various sections of the Specifications.
- B. Each Contractor shall submit one (1) set of blue line drawings indicating on this set of Drawings, "Record Drawing" conditions in red. Further, indicated by letter, all "Record Drawing" conditions different from the Specifications specified. These Drawings and letters shall be submitted to the Architect.

3. FINAL INSPECTION AND ACCEPTANCE

- A. When the Contractor is satisfied that all work required by plans and specifications for his division of the contract has been completed, he shall prepare his own punch list and complete it. After he has completed his own punch list, he shall notify the Architect in writing.
- B. Upon acceptance of this notification, the Architect and Contractor's Representative will conduct a punch list inspection to determine what items remain in an unacceptable condition. A report of this inspection will be delivered to the Contractor as soon as possible following acceptance of the Contractor's letter of completion.
- C. Upon receipt of the list of deficiencies, which shall include a schedule for completion of the items, the Contractor shall take immediate corrective action of all items.
- D. The Contractor shall notify the Architect and the Owner, in writing, a minimum of five (5) days prior to the date of Final Inspection.
- E. If such inspection proves to be completely satisfactory to the Owner, the construction period shall terminate on date of such Final Inspection, and a certificate of substantial completion shall be completed by the Architect and submitted to the Owner and Contractor for execution.

4. CLEANING UP

- A. Contractor shall daily clean up all refuse, rubbish, scrap materials and debris caused by his operations to the end that at all times the site shall present a neat, orderly and workmanlike appearance. Crates and cartons in which materials, equipment, or fixtures are received shall be removed daily.
- B. If, in the opinion of the Architect, neatness is not maintained, the Architect may have the area cleaned, and charge the costs to the responsible Contractor. The Architect may pro-rate the cost of clean-up to all Division Contractors if responsibility is not clear, and the Owner may withhold such charges from amounts owing to Subcontractors and pay the same directly to the persons doing such work.

- C. At the completion of the building, the General Contractor, in addition to removal of accumulated rubbish, shall remove stain spots and marks from all exposed surfaces of existing and new construction.
- D. All contractors, at the completion of their branch of work, shall remove all surplus material, false work, temporary structures, including foundations thereof, plants of any description and debris of every nature resulting from the operations and put the site in a neat and orderly condition.

5. RELEASE OF LIENS

- A. The lien laws of the State of Ohio shall govern all work and materials.
- B. The Contractor shall furnish the Owner with each estimate for payment and before final payment is made, a full Release of Lien signed by all Subcontractors and Material men associated in any way with the work.
- C. If any Subcontractor refuses to furnish a Release or receipt in full, the Contractor may furnish a bond satisfactory to the Owner to Indemnify the Owner against any lien.
- D. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all the monies that the latter may have been compelled to pay in discharging such lien including all costs and a reasonable attorney's fee.

6. RECORD DRAWINGS

- A. Each Contractor shall keep an accurate record of all deviations from Contract Documents and shall neatly and correctly enter in colored pencil any deviations on drawings affected and shall keep drawings available for inspection. A separate set of drawings will be maintained for each separate Contract.
- B. At completion of job and before final approval, Contractor shall make final corrections to drawings and certify to the accuracy of each print by signature thereon and deliver same to the Architect.

END OF SECTION

SECTION 017300 - OPERATION & MAINTENANCE DATA

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

- A. Format and content of manuals.
- B. Instruction of Owner's personnel.

3. RELATED REQUIREMENTS

- A. Specified elsewhere:
  - 1. Section 013400 - Shop Drawings, Product Data and Samples
  - 2. Section 017000 - Project Close-Out
  - 3. Individual Specification Sections: Specific requirements for operating and maintenance data.

4. QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

5. FORMAT

- A. Prepare in the form of an instructional manual.
- B. Binders: Commercial quality, 8-1/2" x 11" three-ring binders with hardback, cleanable, plastic covers, 1" minimum ring size. When multiple binders are used, correlate data into related consistent groupings.
- C. Cover: Identify each binder with type or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of project and separate building; identify subject matter of contents.
- D. Arrange content by systems, under section numbers and sequence of Table of Contents of this project manual.
- E. Provide tabbed fly leaf for each separate product and system, with type description of product and major component parts of equipment.
- F. Text: Manufacturer's printed data, or typewritten data on 20 lb. paper.
- G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size.

6. CONTENTS, EACH VOLUME

- A. Table of Contents: Provide title of project, names, addresses, and telephone numbers of Architect, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- B. For Each Product or System: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Mark each sheet to clearly identify specific products and components parts, and data applicable to installation; delete inapplicable information.
- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. (Do not use Project Record Documents as maintenance drawings.)
- E. Type Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties and Bonds: Bind in copy of each.

7. MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials and Finishes: Include product data with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture-Protection and Weather-Exposed Products: Include product data listing applicable reference standards, chemical composition and details of installation. Provide recommendations for inspections, maintenance and repair.
- D. Additional Requirements: As specified in individual specification sections.

8. MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each Item of Equipment and Each System: Include description of unit or system and component parts. Give function, normal operating characteristics and limiting conditions. Include performance curves with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Provide electrical service characteristics, controls and communications.
- C. Include as-installed color coded wiring diagrams.

- D. Operating Procedures: Include start-up, break-in and routine normal operating instructions, and sequences. Include regulation, control, stopping, shut-down and emergency instructions. Include summer, winter and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for trouble-shooting, disassembly, repair and reassembly instructions; and alignment, adjusting, balancing and checking instructions.
- F. Provide servicing and lubrication schedule and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
- J. Provide as-installed control diagrams by controls manufacturer.
- K. Provide Contractor's coordination drawings with as-installed color coded piping diagrams.
- L. Provide charts of valve tag numbers with location and function of each valve, keyed to flow, and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices and recommended quantities to be maintained in storage.
- N. Additional Requirements: As specified in individual specification sections.
- O. Provide a listing of Table of Contents for Design Data with tabbed fly sheet and space for insertion of data.

9. INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment and maintenance of products, equipment, and systems at agreed upon times.
- B. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- C. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

10. SUBMITTALS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of work. Architect will review draft and return one copy with comments.
- B. For equipment or component parts of equipment put into service during construction and operated by owner, submit documents within 10 days after acceptance.

- C. Submit one copy of completed volumes in final form 15 days prior to final inspection with Architect comments. Revise contents of documents prior to final submittal.
- D. Submit three copies of revised volumes of data in final form within 10 days after final inspection.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION



SECTION 024119 - DEMOLITION AND REMOVAL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Furnish all labor, materials, services and equipment required to complete site clearance, demolition and preparation as specified herein and as indicated on the Drawings. Work shall include, but not be limited to, the following:
  - 1. Protection of existing utilities, structures and adjacent areas.
  - 2. Demolition and removal of non-salvageable items from the site.
  - 3. Removal of rubbish from the site.
  - 4. Disconnection, removal, and surrender to Owner of items to remain property of the Owner.
  - 5. Site layout.
  - 6. Additional demolition as required to facilitate new construction, whether specifically shown on the drawings or not.
- B. This contractor shall provide the preparation of the existing floor surfaces following demolition as required to achieve a satisfactory installation of the specified floor finish, as determined by the Architect. This preparation shall include, but not be limited to, removal of residual existing mastic, grinding of high areas of floor, filling of holes with appropriate floor filler, leveling of areas of floor with specified floor filler, leveling of areas of floor with specified floor filler, sanding and clean-up of floor areas that receive new tile and carpet, primer as required for tile and/or carpet adhesive, etc. Back-up material required for holes in floor prior to application of floor filler to be furnished and installed by this contractor.
- C. Provide a written sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.

1.2 WORK SPECIFIED IN OTHER SECTIONS

- A. The Mechanical Contractor and Plumbing Contractor will disconnect and cap any mechanical items such as heaters, ductwork, water lines, utility lines and plumbing items respectively that are related to the demolition work in addition to any disconnections and removals of mechanical items or systems that are related to his own work.
- B. The Electrical Contractor will disconnect and cap any electrical items such as light fixtures, switches or fire alarms involving electrical systems and circuitry that are related to the demolition work in addition to any disconnections and removal of electrical items or systems that are related to his own work.

1.3 JOB CONDITIONS

- A. Traffic:

1. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, or corridors.
2. Do not close or obstruct roads, streets, walks, corridors or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

B. Protection:

1. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures.
2. Provide safeguards, including warning signs, barricades, temporary fences, temporary partitions, lights, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations.
3. Fences, barricades, and exposed lights and other similar items around hazardous areas shall be maintained until such hazards have been completely eliminated and excavations have been completely filled.
4. Properly protect all components and surfaces of the existing structures. All existing items and surfaces damaged during the work are to be repaired/replaced as required to equal or better condition than previously existing, at the contractor's expense.
5. In addition to fire and safety rules listed elsewhere to be observed in performance of work, include following:
  - a. Exitways, and exit accesses shall be kept free of obstructions and debris at all times.
  - b. When any type of open flame is used the Owner must be notified before the work is started. Fire alarm will be turned off and a fire watch, supplied by the Contractor, will be required, with extinguishers and fire blankets on hand at required locations. All possible users shall be instructed in use of fire extinguishers.
6. Concurrently with the work of the Contract the Owner will maintain normal operation of all existing facilities and complete work by it's own workforce.
  - a. All existing building exits shall be kept unobstructed at all times to afford emergency egress from building. At no time shall any required entrance or exit from the building be blocked or rendered inoperative without provisions being made before hand to provide suitable temporary alternate exits.
  - b. This contractor shall schedule his work to cause no interference with operations of existing building. All construction activity including storage of materials, employee parking, access to construction site, etc., shall be limited to the area of construction.

- c. This contractor shall verify with the Owner the location of, and areas available for the storage of material and tools, and the placement of the construction office and temporary toilets. The General Contractor shall clean up and restore such areas to their original conditions upon completion of the work.

C. Damages:

1. Promptly repair damages caused to adjacent facilities by demolition operations at no cost to Owner.

D. Utility Services:

1. Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
2. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
3. In the event an existing utility is damaged, the Contractor will begin work immediately to repair damage, notify the Owner of the damage, and continue work without stopping until the damage has been repaired and service is restored. The repairs will be at the Contractor's expense.

## PART 2 - PRODUCTS

### 2.1 TEMPORARY PARTITIONS

- A. Construct temporary partitions and doors as required or as shown on the drawings, before demolition begins. Partitions shall be constructed of 4" nominal fire treated wood studs, floor to ceiling, fire treated plywood facing, scribe around any ductwork or utility lines, caulk at all perimeter joints where partitions abut floor, ceiling and walls. Wall which separate the exterior are to be insulated to R-11 minimum. Furnish and install temporary doors at locations as required and as shown. Doors shall be fire treated plywood. Provide and install substantial hinges and spring closers each leaf, astragal each pair door, and locks or latches as required and directed by Architect. All drop cloths and tarpaulins used during demolition shall be fire retardant treated. The partitions shall be removed only with approval of Architect.

## PART 3 - EXECUTION

### 3.1 DEMOLITION

- A. All bidders shall, before presenting their proposals, visit the site and thoroughly familiarize themselves with the scope of the work in connection therewith and the conditions under which it is required to be executed. The bidder shall thoroughly familiarize himself with existing structures and the imposed loadings and the concentration of loads on the existing structures.
- B. Prior to removal of materials from existing structures, the Owner will inspect and mark any items to be salvaged. Items shall be carefully removed, cleaned and stored as directed. Furniture and fixtures not attached or built-in will be removed by Owner/Tenant.

- C. Any items not marked for salvage or re-use in new construction shall be hauled from the site and disposed of.
- D. Contractor shall exercise caution in the demolition and shall not remove any more width and height than is necessary. Erect barricades, shoring, bracing, needling, etc., as required to prevent injury and structural failures.
- E. Contractor shall immediately notify the Owner in writing of any unsafe or questionable conditions that he discovers.
- F. Pollution Controls: Use sweeping compounds, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practicable level. Comply with governing regulations pertaining to environmental protection.
- G. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

### 3.2 REPLACEMENT OF DAMAGED AREAS

- A. Contractor shall repair or replace, at no additional cost to the Owner, any damage resulting from, or incidental to demolition or site clearance.
- B. Replacement or repair of items damaged by demolition work or work incidental thereto, shall be performed by this Contractor as soon as is practical and as directed by the Architect.

### 3.3 DISPOSAL OF DEMOLISHED MATERIALS

- A. General:
  - 1. Remove from site debris, rubbish, and other materials resulting from demolition operations.
  - 2. Burning of removed materials from demolished structures will not be permitted on site.
- B. Removal:
  - 1. Transport materials removed from demolished structures and dispose of off site at a place of legal disposal.

### 3.4 SITE LAYOUT

- A. Elevations and dimensions noted on drawings have been taken from existing construction. Since all new construction relates to existing structures, all dimensions and relationships shall be verified with existing conditions and adjustments made accordingly. All changes from dimensions shown shall be recorded on "Record" Drawings.
- B. General Contractor shall establish additional bench marks as required and approved by the Architect, to facilitate his work.

END OF SECTION

## SECTION 079200 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Silicone joint sealants.
2. Latex joint sealants.
3. Urethane joint sealants.
4. Acoustical joint sealants.
5. Joint sealant backings.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples: For each kind and color of joint sealant required.

#### 1.3 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  1. Warranty Period: **Two** years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  1. Warranty Period: **Five** years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 JOINT SEALANTS, GENERAL

##### A. VOC Content: Sealants and sealant primers shall comply with the following:

1. Architectural sealants shall have a VOC content of **250** g/L or less.
2. Sealants and sealant primers for nonporous substrates shall have a VOC content of **250** g/L or less.

3. Sealants and sealant primers for porous substrates shall have a VOC content of **775 g/L** or less.

B. Colors of Exposed Joint Sealants: **As selected by Architect from manufacturer's full range.**

## 2.2 SILICONE JOINT SEALANTS

A. Mildew-Resistant Silicone Joint Sealant: ASTM C 920.

1. Type: Single component (S).
2. Grade: nonsag (NS).
3. Class: 25.

## 2.3 URETHANE JOINT SEALANTS

A. Urethane Joint Sealant: ASTM C 920.

1. Type: multicomponent (M).
2. Grade: nonsag (NS).
3. Class: 25.

## 2.4 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

## 2.5 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

## 2.6 JOINT SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

## 2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
  - 1. Remove laitance and form-release agents from concrete.
  - 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.2 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- F. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.
- G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### 3.3 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
  - 1. Joint Locations:
    - a. Isolation joints in cast-in-place concrete slabs.
    - b. Control and expansion joints in stone flooring.
    - c. Control and expansion joints in brick flooring.
    - d. Control and expansion joints in tile flooring.
  - 2. Joint Sealant: Urethane.
  - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
  - 1. Joint Locations:
    - a. Control and expansion joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints of exterior openings where indicated.
    - c. Tile control and expansion joints.



- d. Vertical joints on exposed surfaces of interior unit masonry or concrete walls and partitions.
  - e. Joints on underside of plant-precast structural concrete beams and planks.
  - f. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
2. Joint Sealant: Latex.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Sealant Location:
    - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    - b. Tile control and expansion joints where indicated.
  2. Joint Sealant: Silicone.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Location:
    - a. Acoustical joints where indicated.
  2. Joint Sealant: Acoustical.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION 079200

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## SECTION 092216 - NON-STRUCTURAL METAL FRAMING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
1. Non-load-bearing steel framing systems for interior partitions.
  2. Suspension systems for interior ceilings and soffits.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

#### 2.2 FRAMING SYSTEMS

- A. Steel Studs and Runners: ASTM C 645.
1. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).
  2. Depth: As indicated on Drawings, 3-5/8 inches (92 mm) or 6 inches (152 mm)].
- B. Slip-Type Head Joints: Where indicated, provide the following in thickness not less than indicated for studs and in width to accommodate depth of studs:
1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- (51-mm-) deep flanges, installed with studs friction fit into top runner and with continuous bridging located within 12 inches (305 mm) of the top of studs to provide lateral bracing.
  2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- (51-mm-) deep flanges and fastened to studs, and outer runner sized to friction fit inside runner.
  3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes due to deflection of structure above.

- C. Firestop Tracks: Manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
  - 1. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).
- E. Cold-Rolled Channel Bridging: Steel, 0.053-inch (1.34-mm) minimum base-metal thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
  - 1. Depth: 1-1/2 inches (38 mm).
  - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38 by 38 mm), 0.068-inch- (1.72-mm-) thick, galvanized steel.
- F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
  - 1. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).
  - 2. Depth: [As indicated on Drawings] [7/8 inch (22.2 mm)] [1-1/2 inches (38.1 mm)].
- G. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.
  - 1. Configuration: Asymmetrical or hat shaped.
- H. Cold-Rolled Furring Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
  - 1. Depth: 3/4 inch (19 mm).
  - 2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum uncoated-steel thickness of 0.033 inch (0.8 mm).
  - 3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
- I. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (31.8 mm), wall attachment flange of 7/8 inch (22 mm), minimum uncoated-metal thickness of 0.018 inch (0.45 mm), and depth required to fit insulation thickness indicated.

## 2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
- B. Hanger Attachments to Concrete:
  - 1. Anchors: Capable of sustaining a load equal to 5 times that imposed as determined by ASTM E 488.
    - a. Type: Postinstalled, expansion anchor.
  - 2. Powder-Actuated Fasteners: Capable of sustaining, a load equal to 10 times that imposed as determined by ASTM E 1190.
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.

- D. Flat Hangers: Steel sheet, 1 by 3/16 inch (25 by 5 mm) by length indicated.
- E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch (1.34 mm) and minimum 1/2-inch- (13-mm-) wide flanges.
  - 1. Depth: 1-1/2 inches (38 mm).
- F. Furring Channels (Furring Members):
  - 1. Cold-Rolled Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.
  - 2. Steel Studs and Runners: ASTM C 645.
    - a. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).
    - b. Depth: [As indicated on Drawings] [3-5/8 inches (92 mm)].
  - 3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22 mm) deep.
    - a. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).
  - 4. Resilient Furring Channels: 1/2-inch- (13-mm-) deep members designed to reduce sound transmission.
    - a. Configuration: Asymmetrical or hat shaped.

## 2.4 AUXILIARY MATERIALS

- A. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
  - 1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C 841 that apply to framing installation.
  - 2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
  - 3. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C 844 that apply to framing installation.
  - 4. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

### 3.2 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
  - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
    - a. Install two studs at each jamb unless otherwise indicated.
    - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
    - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
  - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
  - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
    - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
  - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
  - 6. Curved Partitions:
    - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
    - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches (150 mm) o.c.
- E. Direct Furring:
  - 1. Screw to wood framing.
  - 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
- F. Z-Furring Members:
  - 1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches (610 mm) o.c.

2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
  3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (305 mm) from corner and cut insulation to fit.
- G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

### 3.3 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
    - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
  3. Do not attach hangers to steel roof deck.
  4. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
  5. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
  6. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.
- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Interior gypsum board.
  2. Exterior gypsum board for ceilings and soffits.
  3. Tile backing panels.

1.2 SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- C. Low Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 GYPSUM BOARD, GENERAL

- A. Regional Materials: Gypsum panel products shall be manufactured within 500 miles (800 km) of Project site.

2.3 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



1. American Gypsum.
2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. Lafarge North America Inc.
5. National Gypsum Company.
6. PABCO Gypsum.
7. Temple-Inland.
8. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.

C. Flexible Gypsum Board: ASTM C 1396/C 1396M. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.

1. Thickness: 1/4 inch (6.4 mm).
2. Long Edges: Tapered.

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch (15.9 mm), Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10.

E. Abuse-Resistant Gypsum Board: ASTM: C 1629/C 1629M

1. Core: 5/8 inch (15.9mm), Type X.
2. Long Edges: Tapered
3. Mold Resistance: ASTM D 3273. Score of 10

## 2.4 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS

A. Exterior Gypsum Soffit Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. American Gypsum.
  - b. CertainTeed Corp.
  - c. Georgia-Pacific Gypsum LLC.
  - d. Lafarge North America Inc.
  - e. National Gypsum Company.
  - f. PABCO Gypsum.
  - g. Temple-Inland.
  - h. USG Corporation.
2. Core: 5/8 inch (15.9 mm), Type X.

## 2.5 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325. Formed in a continuous process of aggregated Portland cement slurry with polymer-coated glass-fiber mesh completely encompassing edges and front & back surfaces with manufacturer's standard formed smooth edges.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. C-Cure: C-Cure Board 990.
    - b. Custom Building Products: Wonderboard.
    - c. FinPan, Inc.: Util-A-Crete Concrete Backer Board.
    - d. USG Corporation: DUROCK Cement Board.
  2. Thickness:
    - a. 5/8 inch (15.9 mm), for installation over metal studs, in lieu of 5/8" gypsum board at wall areas scheduled to receive tiling specified in Division 09 Section "Tiling".
    - b. 1/2" (12.7 mm) for installation over new CMU walls, or all types of existing walls, scheduled to receive tiling specified in Division 09 Section "Tiling".
  3. Mold Resistance: ASTM D 3273, score of 10.

## 2.6 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
- B. Exterior Trim: ASTM C 1047.
1. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.
- C. Aluminum Trim: ASTM B 221 (ASTM B 221M), Alloy 6063-T5.
- D. Gypsum board aluminum reveals, square.

## 2.7 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
1. Interior Gypsum Board: Paper.
  2. Exterior Gypsum Soffit Board: Paper.
  3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
  4. Tile Backing Panels: As recommended by panel manufacturer.

- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

## 2.8 AUXILIARY MATERIALS

- A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
  - 1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
- C. Sound Attenuation Blankets: As specified in Division 07 Section "Thermal Insulation".
- D. Acoustical Joint Sealant: ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings as demonstrated by testing according to ASTM E 90.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
    - b. Grabber Construction Products; Acoustical Sealant GSC.
    - c. Pecora Corporation; AC-20 FTR.
    - d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
    - e. USG Corporation; SHEETROCK Acoustical Sealant.
  - 2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 3. Acoustical joint sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."
- F. Vapor Retarder: As specified in Division 07 Section "Thermal Insulation."

## PART 3 - EXECUTION

### 3.1 APPLYING AND FINISHING PANELS

- A. Comply with ASTM C 840.

- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
  - 1. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- E. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 2: Panels that are substrate for tile or panels that are substrate for acoustical tile.
  - 3. Level 3: Not used
  - 4. Level 4: All gypsum board surfaces that will be exposed to view unless otherwise indicated.
    - a. Primer and its application to surfaces are specified in other Division 09 Sections.
  - 5. Level 5: At locations as noted on drawings.
    - a. Primer and its application to surfaces are specified in other Division 09 Sections.
- H. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- I. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes acoustical tiles and concealed suspension systems for ceilings.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Coordination Drawings: Drawn to scale and coordinating acoustical tile ceiling installation with hanger attachment to building structure and ceiling mounted items. Show size and location of initial access modules.
- C. Samples: For each exposed finish.
- D. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory.
- B. Fire-Test-Response Characteristics:
  - 1. Fire-Resistance Characteristics: Where indicated, provide acoustical tile ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
    - a. Identify materials with appropriate markings of applicable testing and inspecting agency.
  - 2. Surface-Burning Characteristics: Acoustical tiles complying with ASTM E 1264 for Class A materials, when tested per ASTM E 84.
    - a. Smoke-Developed Index: 450 or less.

1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Acoustical Ceiling Units: Full-size tiles equal to 2.0 percent of quantity installed.

2. Suspension System Components: Quantity of each concealed grid and exposed component equal to 2.0 percent of quantity installed.

## PART 2 - PRODUCTS

### 2.1 ACOUSTICAL TILE CEILINGS, GENERAL

- A. Acoustical Tile Standard: Comply with ASTM E 1264.
  1. Acoustical tile ceiling grid shall be manufacturers standard 15/16" exposed T grid. Color shall be white.
- B. Metal Suspension System Standard: Comply with ASTM C 635.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
  1. Anchors in Concrete: Expansion anchors fabricated from corrosion-resistant materials, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
  2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.
- D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
  1. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.
- E. Seismic struts and seismic clips.
- F. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

### 2.2 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING

- A. Available Products:
  1. Armstrong World Industries, Inc.
  2. USG, Inc.

3. Approved equal.

B. Ceiling Schedule:

1. ACT1 – Offices and break room and all other areas not otherwise noted.
  - a. Size – 2ft by 4ft with square edge.
  - b. NRC: 70 or better.
  - c. CAC: 35 or better.
  - d. Sag resistant.
  - e. Anti-mold and anti mildew.
  - f. Fire protection: class A
  - g. Products:
    - 1) Armstrong Fine Fissured 1713
    - 2) USG Radar Open Plan 22320
    - 3) Approved equal.
2. ACT2 – Restrooms, shower rooms and locker rooms.
  - a. Size – 2ft by 4ft with square edge.
  - b. NRC: 70 or better.
  - c. CAC: 35 or better.
  - d. Sag resistant.
  - e. Anti-mold and anti mildew.
  - f. Products:
    - 1) Armstrong Ceramaguard 608
    - 2) USG Radar Ceramic Panels 56645
    - 3) Approved equal.

C. Color: white.

2.3 METAL SUSPENSION SYSTEM FOR ACOUSTICAL TILE CEILING

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
- B. Products: provide system and components matching existing grid system.
- C. Direct-Hung, Fire-Rated Suspension System: Heavy-duty structural classification. Provide environmental grid system where noted above.
- D. Access: Upward, with each access unit identified by manufacturer's standard unobtrusive markers.
- E. Provide hold down clips in all restroom and vestibule locations.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders.
- C. Suspend ceiling hangers from building's structural members, plumb and free from contact with insulation or other objects within ceiling plenum. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers, use trapezes or equivalent devices. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
  - 1. Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs.
  - 2. Do not attach hangers to steel deck tabs or to steel roof deck.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical tiles. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material.

END OF SECTION 095123



SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Thermoset-rubber base.
  2. Rubber molding accessories.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.2 THERMOSET-RUBBER BASE **RB-1**

- A. Manufacturers: Subject to compliance with the requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
1. Roppe Corporation
  2. Johnsonite Inc.
  3. Flexco Inc.
- B. Product Standard: ASTM F 1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
- C. Thickness: 0.125 inch (3.2 mm).
- D. Height: 4 inches (102 mm) unless noted otherwise
- E. Lengths: Cut lengths 48 inches (1219 mm) long. Material in rolls is not acceptable.
- F. Outside Corners: Preformed.

- G. Inside Corners: Preformed.
- H. Colors: See Drawings for basis of design Color Information

### 2.3 RUBBER MOLDING ACCESSORY

- A. Comply with manufacturer's written instruction for installing resilient accessories
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet ad resilient floor covering that would otherwise be exposed.

### 2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
  - 1. Adhesives shall have a VOC content of **50 g/L** or less **and 60 g/L or less for rubber stair treads.**

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- B. Do not install resilient products until materials are the same temperature as space where they are to be installed.
- C. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

### 3.2 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.

### 3.3 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

### 3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes modular carpet tile and walk-off tile systems.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
  - 2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Shop Drawings: For carpet tile installation, plans showing the following:
  - 1. Carpet tile type, color, and dye lot.
  - 2. Type of installation.
  - 3. Pattern of installation.
  - 4. Pattern type, location, and direction.
  - 5. Pile direction.
  - 6. Type, color, and location of edge, transition, and other accessory strips.
  - 7. Transition details to other flooring materials.
- C. Samples: For each of the following products and for each color and texture required. Samples for Initial Selection: For each type of carpet tile.
  - 1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.
- D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

- B. Sample Warranty: For special warranty.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
  1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
  2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

#### 1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd..

#### 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
  1. Build mockups at locations and in sizes shown on Drawings.
  2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI's "CRI Carpet Installation Standard."

#### 1.10 FIELD CONDITIONS

- A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

#### 1.11 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
  - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
  - 2. Failures include, but are not limited to, the following:
    - a. More than 10 percent edge raveling, snags, and runs.
    - b. Dimensional instability.
    - c. Excess static discharge.
    - d. Loss of tuft-bind strength.
    - e. Loss of face fiber.
    - f. Delamination.
  - 3. Warranty Period: 10 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 CARPET TILE

- A. Basis-of-Design Product: The design for the carpet tile is based on the manufacturer identified below. Subject to compliance with requirements, provide the named product:
  - 1. Basis-of-Design: refer to drawings
- B. Color: Refer to drawings for color and mfr
- C. Fiber Content: 100 percent nylon
- D. Fiber Type: Eco Solution Q Nylon or Equal.
- E. Pile Characteristic: Multi-Level Pattern Loop.
- F. Weight: 17 oz/ yd<sup>2</sup>
- G. Density: 6652 per cu. yd.
- H. Pile Thickness: 0.092 1 for finished carpet tile
- I. Stitches: 85 per inch.
- J. Gage: 1/12 ends per inch.
- K. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- L. Secondary Backing: Manufacturer's standard material.

- M. Backing System: Ecoworx tile
- N. Size: See Drawings for Carpet Tile Size
- O. Applied Treatments:
  - 1. Soil-Resistance Treatment: Manufacturer's standard treatment.
- P. Performance Characteristics:
  - 1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
  - 2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
  - 3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D 2646.
  - 4. Tuft Bind: Not less than 5 lbf according to ASTM D 1335.
  - 5. Delamination: Not less than 3.5 lbf/in. according to ASTM D 3936.

## 2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.
  - 1. Adhesives shall have a VOC content of 10.00 mg/sq or less.
  - 2. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- C. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.
- B. Examine carpet tile for type, color, pattern, and potential defects.
- C. Concrete Slabs: surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
  - 1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

- a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
  - b. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 95 percent relative humidity level measurement.
  - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.
- D. Wood Subfloors: Verify the following:
1. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
- E. Metal Subfloors: Verify the following:
1. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
- F. Painted Subfloors: Perform bond test recommended in writing by adhesive manufacturer.
1. Access Flooring Systems: Verify the following:
  2. Access floor substrate is compatible with carpet tile and adhesive if any.
  3. Underlayment surface is flat, smooth, evenly planed, tightly jointed, and free of irregularities, gaps greater than 1/8 inch, protrusions more than 1/32 inch, and substances that may interfere with adhesive bond or show through surface.
- G. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. General: Comply with CRI's "Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.



### 3.3 PREPARATION

- A. General: Comply with CRI's "CRI Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

### 3.4 INSTALLATION

- A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: As recommended in writing by carpet tile manufacturer.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns indicated on Drawings.
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.

3.5 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
  - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
  - 2. Remove yarns that protrude from carpet tile surface.
  - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI's "Carpet Installation Standard," Section 20, "Protecting Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 09 90 00 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All provisions of the Contract Documents apply to this Section. The Contractor for this Section shall be responsible for complete familiarity with same.
- B. Related Sections:
  - 1. Section 033000 Cast-In-Place Concrete
  - 2. Section 042000 Unit Masonry
  - 3. Section 055000 Metal Fabrications
  - 4. Section 064000 Finish Carpentry
  - 5. Section 081113 Hollow Metal Doors and Frames
  - 6. Section 092900 Gypsum Board

1.2 SCOPE OF WORK

- A. Preparation of surfaces for painting and finishing and for the painting and finishing of all exposed surfaces to receive one of the applications specified in this Section.
- B. Puttying set nail heads and repairing other blemishes in wood, gyp board and plaster.
- C. Priming and back priming of all wood surfaces.
- D. Painting miscellaneous items in walls and ceilings, and any other items not otherwise specified.
- E. Painting all visible surfaces of light fixtures, grille work, mechanical and electrical equipment not painted or pre-finished.
- F. Painting of all exposed ductwork, piping, conduit, insulation, brackets and hangers unless noted otherwise.
- G. Painting portion of ductwork interior or other surfaces visible through grilles, flat black.
- H. Contractor to assume all walls, exposed structure, ductwork, conduits, piping and ceiling will be painted with different colors as selected by the Architect. Surfaces in a room or area to receive painted finishes may have different colors of paint used.**

### 1.3 WORK NOT INCLUDED OR SPECIFIED IN OTHER SECTIONS

- A. Shop priming specified in other Sections.
- B. Copper, brass, aluminum, stainless steel and other non-ferrous metals shall not be painted unless specifically noted otherwise.

### 1.4 SYSTEM DESCRIPTION

- A. Environmental Requirements
  - 1. Painting manufacturer and Contractor shall conform to State and local V.O.C. (Volatile Organic Compound) Regulations in area where Project is located.
    - a. VOC content shall be a maximum 340 gm/liter, for field applied finishes.

### 1.5 SUMMARY

- A. This Section includes surface preparation and the application of paint systems specified in this section: Adjust list below to suit Project.

### 1.6 SUBMITTALS

- A. Before materials are ordered, submit a complete list of proposed materials for each type of product listed. When requested, submit product data and a complete specifications and samples of materials for approval.
- B. Samples:
  - 1. Color schedule will be furnished by the Architect prior to commencement of painting work, and from this the painting contractor shall prepare duplicate set of samples of treatments for all major surfaces.
  - 2. Samples shall each be made on material like that to be treated and the material shall be positioned, during execution of the sample, to simulate the job conditions, i.e., vertical, overhead horizontal, or below eye level horizontal.
  - 3. When approved, samples will be so marked, with one set retained by Architect and one by painting contractor. Approved sample shall be strictly duplicated in the work. Additional coats, if required to reproduce approved samples, shall be applied by the Contractor without additional cost to the Owner.

### 1.7 QUALITY ASSURANCE

- A. Codes and Standards: Comply with pertinent codes and regulations.

## 1.8 EXTRA MATERIALS

Provide Owner, at completion of job, with one (1) gallon (3.8L) of paint in each color selected. Paint to be supplied in tightly sealed containers labeled with color numbers as listed in the final color schedule.

## PART 2 - PRODUCTS

### 2.1 PAINT, GENERAL

- A. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
  2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
  3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
  4. Floor Coatings: VOC not more than 100 g/L.
  5. Shellacs, Clear: VOC not more than 730 g/L.
  6. Shellacs, Pigmented: VOC not more than 550 g/L.
- C. Colors: As indicated in a color schedule
- D. MATERIALS
- E. All paint, varnish, enamel, lacquer, and related materials shall be first quality standard products of established manufacturers who have continuous performance in the manufacture of each product for 10 years and approved by the Architect. Provide best quality, first line grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade, first line product will not be acceptable. All materials shall comply with the VOC Content requirements listed in this Section. The following manufactures are acceptable:
1. Benjamin-Moore
  2. Pratt & Lambert
  3. Sherwin-Williams (***Basis of Design Products***)

#### 4. Porter Paint Company

Other manufactures will be considered, providing performance regarding scrubability and hiding power are equal to or exceed manufactures listed above. Documentation of performance tests by an independent testing laboratory are required before approval.

- F. Epoxy coatings shall be equal to those manufactured by Porter Paint Company. Materials by other manufacturer's require Architect's approval prior to submission of proposal. Epoxy coating colors shall not necessarily be selected from manufacturer's standard colors.
- G. All materials shall be delivered to the site in unopened original containers, bearing the brand name and the manufacturer's name, and having seals intact. Containers shall not be opened until contents are ready to be used.
- H. No materials shall be reduced or changed except as indicated by manufacturer's directions on containers.
- I. Thinners and dryers shall be added only in accordance with the manufacturer's printed instructions. Paints with solids shall be mixed at least 24 hours before use and shall be re-mixed before application. Turpentine shall conform to ASTM Standard Specifications D-13.
- J. In selecting painting materials, the Contractor shall take into consideration special atmospheric conditions prevailing and any excessive treatment to which the particular surfaces might be subject.
- K. All latex paints specified shall be 100% latex base.

#### 2.2 PAINTING SCHEDULE

- A. Any surface visible in the completed project except floors and areas noted unpainted on the drawings; shall be painted in accordance with the following descriptions:
- B. Exterior Surfaces:
  - 1. Fabricator-primed Ferrous Metals
    - a. Spot-prime abrade shop primed areas
    - b. 2 coats exterior alkyd gloss enamel
  - 2. Non-primed Ferrous Metals
    - a. 1 coat lead-free alkyd primer
    - b. 2 coats gloss alkyd enamel
  - 3. Exterior Gypsum Board Sheathing
    - a. 1 coat primer

- b. 2 coats semi-gloss exterior grade latex
- 4. Masonry (non-texture surfaces)
  - a. 1 coat primer
  - b. 2 coats exterior grade latex
- 5. Exterior Concrete / Masonry Coating System
  - a. 1 coat primer
  - b. 1 coat (min.) of high-build acrylic coating to achieve uniform appearance
  - c. Basis of Design: Thoro / BASF - "Thorocoat", water based, high build 100% acrylic waterproof coating, with "Thoro CM Primer". The texture of the coating shall be "Fine"

B. Interior Surfaces:

- 1. Gypsum Board
  - a. 1 coat primer
  - b. 2 coats low luster latex enamel

or for surfaces indicated on drawings to receive epoxy coating:

  - a. 1 coat latex wall sealer
  - b. 2 coats water based catalyzed epoxy paint
- 2. Wood / Plywood (Painted)
  - a. 1 coat enamel primer
  - b. 2 coats alkyd semi-gloss enamel, unless epoxy paint is called for, then water based epoxy paint shall be used
- 3. Hardwood (Stained)
  - a. 1 coat alkyd wood stain (omit if natural is desired by Architect)
  - b. 1 coat urethane filler-sealer
  - c. 2 coats clear satin urethane
- 4. Fire Retardant Treated Plywood
  - a. 1 coat primer
  - b. 2 coats low luster Latex enamel
- 5. Masonry
  - a. 1 coat block filler
  - b. 2 coats alkyd eggshell enamel
- 6. Masonry (Epoxy system)
  - a. 1 coat block filler
  - b. 2 coats water based catalyzed epoxy-coating
- 7. Fabricator or manufacturer primed Ferrous Metals
  - a. 2 coats interior alkyd semi-gloss enamel

8. Non-primed Ferrous Metals
  - a. 1 coat lead-free alkyd metal
  - b. 1 coats alkyd semi-gloss enamel
  
9. Overhead Structure, Piping, Conduits and Ductwork
  - a. Waterborne Acrylic Dry Fall (Equal Sherwin-Williams B42 Series)
  - b. Flat Finish
  - c. Tinted, color to match existing building color scheme

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
  
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  1. Concrete: 12 percent.
  2. Masonry (Clay and CMU): 12 percent.
  3. Wood: 15 percent.
  4. Plaster: 12 percent.
  5. Gypsum Board: 12 percent.
  
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
  
- D. Before commencing work on surfaces of any type, the Painting Contractor shall carefully inspect same and satisfy himself that they are dry and in all other respects suitable to receive the specified treatment. If the condition of any surface is such that it cannot be put in proper condition by normal preparatory methods, and arrangements for prompt correction cannot be made at once with the General Contractor, the Painting Contractor shall not undertake surface preparation and shall, instead, at once address a written request to the General Contractor for corrections which will provide an acceptable surface.
  
- E. Application of any coating to a surface will constitute acceptance of the surface by the Painting Contractor. If after treatment, the completed finish (or any portion thereof) blisters, checks, peel, or otherwise shows indication of dampness or other irregular condition of surface, the Painting Contractor shall, at his own expense, remove the applied treatment and refinish the part affected to the satisfaction of the Architect. (The Painting Contractor should determine dryness of all moisture-holding materials by use of a reliable electronic moisture meter).



- F. Each coat of material applied must be inspected and approved by the Architect before the application of the succeeding specified coat; otherwise, no credit for the concealed coat will be given and the Painting Contractor shall assume the responsibility to recoat the work in question. The Painting Contractor shall notify the Architect, when each coat is completed, for inspection.

### 3.2 USE OF PREMISES

- A. No plumbing fixture, open waste, drain, or vent pipe (or other pipe of any kind), shall be used to dispose of paint materials, used rags, waste, or other materials.
- B. New materials of all kinds, shall not be used as supports for planking and shall be thoroughly protected from damage at all times.
- C. Provide, erect and maintain all staging and scaffolding required for execution of the work, move when necessary at the option of the Architect, to permit installation of other work. Remove from premises promptly at completion of work.

### 3.3 PREPARATION AND APPLICATION

- A. Comply with manufacturer's written instructions and recommendations for preparation and application.
- B. Before painting is started in an area, finish carpentry, including correction and adjustments shall have been completed, all glazing installed and the area of the building cleaned of all debris, thoroughly broom cleaned and dusted out. All plastering and drywall shall be finished and shall be thoroughly dry.
- C. Finish hardware and plates for electric outlets shall have been fitted by the General and Electrical Contractors, and shall be removed by and replaced by the Painting Contractor.
- D. Nail holes in all exposed woodwork shall be filled with putty colored to match accurately the approved finishes. Seal knots and pitch streaks before applying primer. Shellac on interior, spar varnish on exterior.
- E. Sandpapering of all wood joints and exposed wood surfaces shall follow paint priming or wood stain application on natural finish work and shall precede second coat work. Sand only with the grain.
- F. Metal surfaces shall be smooth and thoroughly cleaned of grease, rust, scale and dust. Shop coats that are marred or abraded shall be cleaned and touched up with primer matching the shop coat.
- G. When part will be exposed to view, sandpaper the entire treated area smooth, feather the edge of surrounding undamaged prime coat, and

extend spot priming onto same, in a manner to eliminate evidence of repair.

- H. Before painting any metal, the surfaces shall be gone over carefully with body putty, if necessary, and sanded smooth.
- I. Unless the prime coat material to be used is recommended by its manufacturer for application over zinc-coated surfaces of the type at hand, after cleaning and any necessary de-glossing, only, surfaces must be given phosphate pre-treatment prior to application of prime coat; usual "vinegar etch" or acid pre-treatment (wash) will not be permitted.
- J. Phosphate Pre-Treatment: Crystalline zinc phosphate type; either "Lithoform", made by the American Chemical Paint Co., Ambler, Pa., or Galvaprep No. 5", made by Neilson Chemical Co., Detroit, Michigan as approved. Follow manufacturer's instructions and directions exactly, as to cleaning prior to treatment, application of treatment and after-rinse.
- K. Concrete Block Masonry:
  - 1. Prepare concrete block masonry surfaces by removing all efflorescence, dirt, rust, oil and grease stains, and method used shall be as determined by the Painting Contractor and paint manufacturer's representative. Surface must be acceptable before painting.
  - 2. Before first paint coat is applied, spot prime any nails and other exposed metal occurring in the surfaces with an oil base masonry primer as recommended by the paint manufacturer, to insure against rust.
- L. Plaster and drywall surfaces shall be sand-papered smooth, and scratches, cracks and abrasions shall be satisfactorily eliminated before priming. Spot seal "hot spots" after first coat has dried.
- M. Storage for paint materials, preparation and mixing shall be in well-lighted and ventilated central location; but shall not be allowed on finished floor. Oily rags and waste must be removed from building every night, and must not be allowed to accumulate.
- N. Dropcloths shall be generously used and shall be carefully placed and secured over floor areas as the paint work progresses.
- O. Adequate safeguards shall be provided against damage from the escape of materials during spray operation. Except that stains may be applied by cloth or sponge, all coatings shall be applied by brush or roller unless spray application is specifically named as acceptable, in description of required treatment.
- P. All adjoining surfaces, finish floors and fixtures shall be carefully protected throughout the painting operations against spray or splash stains, marks or other damage; and should such defacement occur as a result of the work, it

shall be corrected in a manner acceptable and satisfactory to the Architect and without added cost to the Owner.

- Q. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
    - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
  - R. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
  - S. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
    - 1. Mechanical Work:
      - a. Uninsulated metal piping.
      - b. Pipe hangers and supports.
      - c. Tanks that do not have factory-applied final finishes.
      - d. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
      - e. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
      - f. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
    - 2. Electrical Work:
      - a. Electrical equipment that is indicated to have a factory-primed finish for field painting.
  - T. Preparation of existing exterior painted metal and prefinished surfaces shall include the following:
    - 1. Remove all oil, grease, dirt oxides and other containments from surfaces per SSPC-SP1.
    - 2. Clean surface area with water based cleaning solution
    - 3. Test existing area with previously finished surfaces with new coating by applying test area of 3 square feet. Allow to dry for one week before checking adhesion.
  - U. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
  - V. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
- 3.4 WORKMANSHIP
- A. All painting shall be done by skilled mechanics working under the supervision of a capable foreman and all workmanship shall be of the

highest quality developing to fullest the possibilities of the materials and the processes specified.

- B. Materials shall be thoroughly stirred and evenly spread without runs, skips, sags, streaks, brush marks, or other defects. Paint shall be cut sharply to lines. Care shall be exercised to avoid lapping of paint over hardware. Painting around glazed openings shall be done promptly after putty is hard, but before shrinkage checks occur and shall seal the jointing of putty to glass.
- C. Do not paint over UL or FM labels.
- D. Not less than 24 hours between coats shall be allowed for drying, and painting, except as otherwise specified, shall not be allowed to proceed except on thoroughly dry surfaces. All painting application shall be in accordance with manufacturer's published specifications. All doors, cabinets and millwork shall be primed upon delivery to the site with stain or paint as required. All wood working shall be backprimed before it is installed.
- E. Exterior painting shall not be done during or immediately following raining or frosty weather or when the temperature is below 50°F, or likely to drop to freezing during drying. The application of treatments while surfaces are exposed to hot sun, or when temperature is above 90°F, or likely to be, during the drying period, shall be avoided.
- G. In using paste wood filler on open grain wood, allow sufficient time for "set" then wipe, first across grain, then with the grain, to secure a clean surface.

### 3.5 PAINTING APPLICATION

- A. The following are descriptions of painting applications. The manufacturer's products named below sets standard for products of other manufacturers listed under MATERIALS Paragraphs 1A and B, whose products shall be of equal to those listed below.
- B. Seal coats shall be tinted to final color. The first coat applied after the seal coat or primer (or first coat on shop primed surfaces), shall be full color as should be each subsequent coat.
- C. All interior and exterior work shall have a minimum of 3 coats (in addition to the specified primer). Provide additional coats as required for proper coverage. Approximately 25% of all painted areas to receive deep tint colors.
- D. Where metal to be painted has not already received a shop coat, it shall be cleaned and primed as directed by the Architect.
- E. The Architect reserves the right to change color before a coat is applied. Such changes if full coverage can be achieved, shall be done by the Contractor, without additional cost to the Owner.

City of Piqua  
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END OF SECTION 09 90 00

## SECTION 10 21 13 - TOILET COMPARTMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Solid-polymer toilet compartments configured as toilet enclosures and urinal screens.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for each exposed product and for each color and texture specified.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

#### 1.5 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: 75 or less.
  - 2. Smoke-Developed Index: 450 or less.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 for toilet compartments designated as accessible.

## PART 2 - PRODUCTS

### 2.1 SOLID-POLYMER UNITS

- A. Toilet-Enclosure Style: Overhead braced, Floor anchored.
- B. Urinal-Screen Style: Wall hung – full support bracket.
- C. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) or polypropylene (PP) panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
  - 1. Integral Hinges: Configure doors and pilasters to receive integral hinges.
  - 2. Heat-Sink Strip: Manufacturer's standard continuous, stainless-steel strip fastened to exposed bottom edges of solid-polymer components to prevent burning.
  - 3. Polymer Panel Finish: One color and pattern in each room.
    - a. Color and Pattern: refer to drawings for manufacturer and color
- D. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.
  - 1. Polymer Color and Pattern: Matching pilaster.
- E. Brackets (Fittings):
  - 1. Stirrup Type: Ear or U-brackets, stainless steel.
  - 2. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.
    - a. Polymer Color and Pattern: Matching panel.

### 2.2 ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.
  - 1. Material: Stainless steel.
  - 2. Hinges: Manufacturer's standard integral hinge for solid-polymer doors.
  - 3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
  - 4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
  - 5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.

6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

### 2.3 FABRICATION

A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

B. Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

B. Clearances: Maximum 1/2 inch (13 mm) between pilasters and panels; 1 inch (25 mm) between panels and walls.

C. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than three brackets attached at midpoint and near top and bottom of panel. Locate wall brackets so holes for wall anchors occur in masonry or tile joints. Align brackets at pilasters with brackets at walls.

### 3.2 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open



approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 10 21 13

SECTION 102800 - TOILET, BATH AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor for this Section shall be responsible for complete familiarity with same.

2. SCOPE OF WORK

A. Furnish all labor, materials, services and equipment required to complete installation of all toilet room accessories with all anchors, accessories and preparatory work as specified herein and as shown on the Drawings.

3. QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in construction; coordinate delivery with other work to avoid delay.

B. Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units. Coordinate cutout requirements with toilet compartments.

C. Products: Provide products at same manufacturer for each type of accessory unit and for units exposed in same areas, unless otherwise acceptable to Architect.

4. SUBMITTALS

A. Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.

B. Setting Drawings: Provide setting drawings, templates, instructions, and directions for installation of anchorage devices in other work.

PART 2 - PRODUCTS

1. TOILET ACCESSORIES: Accessories listed below are as manufactured by Bobrick Washroom Equipment, Inc as a Basis of Design. Equal items by Bradley Corp., or Accessory Specialties are also acceptable. Equal items by other manufacturers will be considered, providing alternate proposals contain complete descriptive information for evaluation by the Architect. All accessory items furnished shall be from one manufacturer.

A Toilet tissue dispenser – owner provided contractor installed

B. Soap dispenser – owner provided contractor installed

- C. Paper towel dispenser/waste - N/A
- D. Grab bar – Bobrick B-6806 x 42” 1½”Ø satin finish with concealed fasten
- E. Grab bar – Bobrick B-6806 x 36” x 1½”Ø satin finish with concealed fasten
- F. Sanitary Napkin/Tampon Dispenser: Owner provided contractor installed
- G. Mirror – Bobrick frameless – refer to drawings for sizes
- H. Access Panels: see Specification section 10900 for product information.
- I. Baby Changing Station – KoalaKare KB200 color to be selected by architect

## 2. UNDERLAVATORY GUARDS

### A. Underlavatory Guard:

- 1. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
- 2. Material and Finish: Antimicrobial, molded plastic, white.
- 3. Where not provided by sink module manufacturer

## 3. CUSTODIAL ACCESSORIES

### B. Mop and Broom Holder:

- 1. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
- 2. Length: 36 inches (914 mm).
- 3. Hooks: Four.
- 4. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
- 5. Material and Finish: Stainless steel, No. 4 finish (satin).
  - a. Shelf: Not less than nominal 0.05-inch- (1.3-mm-) thick stainless steel.
  - b. Rod: Approximately 1/4-inch- (6-mm-) diameter stainless steel.

## PART 3 - EXECUTION

### 1. INSPECTION

- A. Installer must examine substrates, previously installed inserts and anchorages necessary for mounting of toilet accessories, and other conditions under which installation is to occur, and must notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.

### 2. INSTALLATION

- A. Install toilet accessory units in accordance with manufacturer's instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations indicated.

3. ADJUSTMENT AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly.
- B. Clean and polish all exposed surfaces after removing protective coatings.

END OF SECTION 108000

SECTION 109000 - MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All provisions of the Contract Documents apply to this Section. The Contractors/Suppliers for this Section shall be responsible for complete familiarity with same.

1.2 SCOPE OF WORK

- A. Furnish all labor, materials and equipment required for complete installation of the equipment and furnishing items, as shown on the Drawings and as specified herein.

1.3 SUBMITTALS

- A. Provide shop drawings, as required for the items specified, for Architect's approval, indicating all materials, details of assembly, installation for specific job conditions and workmanship.

1.4 DELIVERY AND STORAGE

- A. All materials shall be delivered to the Project in manufacturer's original unopened containers, clearly marked as to manufacturer and material contents. All materials shall be stored off the ground in a protected, dry area.

PART 2 - PRODUCTS

2.1 SCIENCE DISPLAY SAFETY SHIELD

- A. BASIS OF DESIGN: Carolina Polycarbonate Safety Shield, 30In high
- B. Location / Configuration of Curtain assembly: See Drawings.

2.2 WALL ACCESS DOORS

- A. Drywall Partition: Flush panel access door, Milcor Style DW, Nystrom Inc. NWC Series or J.L. Industries equal. Keyed lock.
- B. Masonry or Tile Partitions: Milcor Style MS with stainless steel finish or equal by Nystrom Inc. or J.L. Industries. Keyed lock.
- C. Size: Provide in all chase walls in restroom / shower areas, min. size shall be 12" by 12". Final location and height shall be coordinated with the Architect.

## 2.3 CEILING ACCESS DOORS

- A. Drywall Ceiling: 24' by 24" keyed access panel door with a primed steel finish. Units by J.L. Industries, Model CT,, Nystrom Inc., or Milcor. are acceptable.
- B. Locations: Provide one access door in Storage Room 149. Coordinate location with Architect and Owner.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install in complete accordance with manufacturer's recommendation.
- B. Provide all required blocking and fasteners. Toggle type fasteners, bearing on gypsum board, will not be accepted.

END OF SECTION 109000



other building components. Provide ¼" = 1'-0" rough-in plan drawings for coordination with trades. Rough-in shall show free area.

- B. Product Data: Submit manufacturer's data for each component and item of laboratory equipment specified. Include component dimensions, configurations, construction details, joint details, and attachments.
- C. Product Samples: Submit for approval:
  - 1. Top samples of each material
  - 2. Finish sample (3" x 5" finished oak wood) of manufacturer's standard finish.
- D. Test Reports: Submit certification of conformance to test performance specified.

#### 1.04 QUALITY ASSURANCE:

- A. Single source responsibility: Each item of a given type of casework, work surface and accessories shall be manufactured or furnished by a single laboratory furniture company. All items included in this section shall be provided and installed by the same (sub)contractor.
- B. Manufacturer's qualifications: Modern plant with proper tools, dies, fixtures and skilled workmen to produce high quality laboratory casework, and shall meet the following minimum requirements:
  - 1. Five years or more experience in manufacture of wood laboratory casework, furniture and equipment of type specified.
  - 2. Ten installations of equal or larger size and requirements.
- C. Installer's qualifications: Factory trained and/or certified by the manufacturer(s).
- D. Cabinet identification: Cabinets are identified on drawings generically. Unless otherwise modified on drawings or in specifications, the manufacturer's current catalog description constitutes specific requirements of each type of cabinet, and the contractor shall provide all components required for a normal complete installation, including, but not limited to, all filers, closures, fasteners, etc.

#### 1.05 DELIVERY, STORAGE AND HANDLING:

- A. Schedule delivery of casework and equipment so that spaces are sufficiently complete that the material can be installed immediately following delivery. Coordinate delivery with other contractors and work by Owner.
- B. Protect finished surfaces from soiling or damage during handling and installation. Keep covered with polyethylene film or other protective coating.



- C. Protect all work surfaces throughout construction period with ¼” corrugated cardboard completely covering the top and securely taped to edges. Mark cardboard in large lettering “No Standing”.

1.06 PROJECT CONDITIONS:

- A. Do not deliver or install equipment until the following conditions have been met:
  - 1. Doors are installed and the area is secure and weather tight.
  - 2. Ceiling, overhead ductwork and lighting are installed.
  - 3. All painting is complete and floor tile is installed.

**PART 2 PRODUCTS**

2.01 ACCEPTABLE MANUFACTURER:

- A. Subject to conformance with these specifications and design intent, products of the following manufacturers are acceptable.
  - 1. Casework and Accessories
    - a. Kewaunee
  - 2. Epoxy Resin Tops and Splashes
    - a. Durcon
  - 3. Design is based upon the Kewaunee, Signature Series (casework); and Durcon (work surfaces).

2.02 CASEWORK MATERIALS:

- A. Lumber
  - 1. Oak lumber is red oak, grade FAS or better, air dried and kiln dried to a 4-1/2% moisture content, then tempered to 6% prior to fabrication. Red oak lumber exposed to view is free of stains, splits, shakes, season checks and other similar defects.
  - 2. Other hardwoods are grade FAS or better, air dried to 4-1/2% moisture content, then tempered to 6% prior to fabrication. Other hardwoods are used in semi-exposed, or unexposed, areas and comply with NHLA grading for FAS or better lumber.
- B. Plywood
  - 1. Oak plywood is red oak, plain sliced, grade 1, plain sliced, book matched, crossbanded, and has a solid core. The ¾ inch red oak plywood is a

minimum of 7-ply, ½ inch is a minimum of 5-ply, ¼ inch is a minimum of 3-ply, and 3/32 inch is 3-ply.

2. Other hardwood plywood are sound grade, have a solid core and are suitable for semi-exposed or unexposed areas. The ¾ inch is a minimum of 7-ply, and 3/32" is 3-ply.

C. Hardboard

1. Hardboard is service tempered and consists of steam-exploded wood fibers, highly compressed into a hard, dense, ¼ inch thick, homogeneous sheet, using natural resins and other added binders. Physical properties: Average modulus of rupture is 5,300 lbs./sq. inch; density is 50 to 60 lbs./cu. foot; and tensile strength of 3,500 lbs./sq. inch.

D. Particleboard

1. Particleboard is industrial grade, with the following physical properties: Density, 46 to 50 lbs./cu. foot; modulus of rupture, minimum 2,200 psi; modulus of elasticity, minimum 450,000 psi.

E. Glass

1. DSP glass is double strength, grade "B", and 1/8" thick.
2. Float glass is poured, clear glass, ¼" thick, with a minimum of 88 percent clarity.
3. Laminated safety glass consists of two outer plies of glass with a vinyl interlayer, and is either 7/32" or ¼" thick.
4. Tempered safety glass is specially heat treated glass, ¼" thick with minimum of 88 percent clarity.

## 2.03 CASEWORK FABRICATION COMPONENTS:

A. Base Cabinets:

1. Frame and rails:
  - a. Horizontal front top frame member: Shall be two pieces of hardware grooved and glued together. The exposed member will be 1-1/4" x 7/16" oak. The unexposed member shall be 2-1/2" x ¾" hardwood.
  - b. Horizontal rear top frame member: ¾" x 2-1/2", solid hardwood.
  - c. Front intermediate rails: ¾" x 3-1/4" 7-ply poplar plywood with ¾" x 1/8" thick oak facing on the exposed edge. Rails shall be multiple doweled and glued to end panels. Intermediate rails will

be mounted at the front between the drawers and between all drawers and doors.

d. All other frame members:  $\frac{3}{4}$ " x 1- $\frac{3}{4}$ " solid hardwood.

2. Backs:

a. Exposed exterior backs:  $\frac{3}{4}$ " thick, 7-ply hardwood plywood and  $\frac{3}{4}$ " x  $\frac{1}{8}$ " thick oak facing.

b. Cabinets with exposed interiors but unexposed exteriors: backs are  $\frac{3}{4}$ " thick hardwood plywood with exposed face of plain sliced select grade 1 oak.

c. Cabinets with unexposed interiors and exteriors: backs are  $\frac{1}{4}$ " service tempered hardboard.

3. End Panels:

a. Cabinets with exposed interiors: end panels are  $\frac{3}{4}$ " thick hardwood plywood with plain sliced select grade 1 oak.

b. Cabinets with exposed exteriors: end panels are  $\frac{3}{4}$ " oak plywood.

c. Cabinets with unexposed interiors and one exposed end panel and one unexposed end panel: exposed end panel is  $\frac{3}{4}$ " hardwood plywood with plain sliced select grade 1 oak, and unexposed end panel is  $\frac{3}{4}$ " hardwood plywood.

d. Cabinets with unexposed interiors and unexposed exteriors: end panels are  $\frac{3}{4}$ " hardwood plywood.

4. Bottom, shelves, and dividers:

a. Cabinets with exposed interiors: All are  $\frac{3}{4}$ " hardwood plywood with plain sliced select grade 1 oak.

b. Cabinets with unexposed interiors: All are  $\frac{3}{4}$ " hardwood plywood.

5. Exposed edges of end panels, bottom, shelves, and dividers are edge banded with  $\frac{3}{4}$ " x  $\frac{1}{8}$ " thick oak facing.

6. Drawer separators at cabinets with locks are  $\frac{1}{4}$ " service tempered hardboard.

B. Construction:

1. All structural joints are multiple doweled and glued. Base cabinets are rigidly constructed, integral units. Each base cabinet is completely enclosed without the use of common partitions, and has flush construction with overlapping doors and drawers, which provides a dust resistant interior.

2. A base cabinet has a full horizontal top frame with multiple doweled and glued joints, intermediate front and rear horizontal parting rails and the  $\frac{3}{4}$ "

plywood bottom, and dividers, as required. Horizontal top frame, intermediate parting rails and the bottom are doweled and let into routed end panels, then glued and fastened with countersunk screws.

3. Backs are recessed and let into routed end panels, except where they need to be removable for access to plumbing. Backs are screwed to the top frame and bottom panel and further secured with glue blocks on each side. An enclosed toe space, 2-1/4" by 4", is provided, with the toe rail screwed to end and bottom panel.
4. Separators where indicated, are let into routed intermediate rails and end panels.
5. Adjustable shelves are supported on heavy-duty, plastic coated, brass plated steel shelf clips, which fit into holes drilled 32mm o.c., in the cabinet end panels.

#### C. Wall and Upper Case Components

1. Front rails: top and bottom, 2-1/4" x 3/4", hardwood with plain select grade 1 oak.
2. Top panel, bottom panel, adjustable shelves
  - a. Cases with exposed interiors: all are 3/4" oak plywood.
  - b. Cases with unexposed interiors: all are 3/4" hardwood plywood.
3. Backs:
  - a. Cases with exposed interiors: back is 1/2" oak plywood.
  - b. Cases with unexposed interiors: back is 1/4" service tempered hardboard.
4. End panels:
  - a. Cases with exposed interiors and exterior: end panels are 3/4" hardwood plywood with plain sliced select grade 1 oak.
  - b. Cases with unexposed interiors and one exposed end panel and one unexposed end panel: exposed end panel is 3/4" hardwood plywood with plain sliced select grade 1 oak, the unexposed end panel is 3/4" hardwood plywood.
5. Exposed edges of end panels and shelves are edge banded with 1/8" x 3/4" solid oak.
6. Exterior hanger rails: 3" x 3/4" hardwood plywood.
7. All wall and base cabinets that are indicated are to have disk tumbler locks with die cast sleeves and cylinders with a stain nickel face and zinc plated

steel cams. The sink base cabinets are not to have locks. All rooms are to be keyed alike. Each lock in all rooms is to be supplied with six (6) cut keys. These cabinets are to be on the master key system.

8. Construction

- a. All structural joints are multiple doweled and glued. Wall and upper cases are rigidly constructed, integral units. Each case is completely enclosed without the use of common partitions, and as flush construction with overlapping doors, which provides a dust resistant interior.
- b. Top panel is multiple doweled and let into routed end panels; lapped, glued and screwed to front top rail; and glued and screwed to each end panel and the back. Bottom panel is tenoned and let into routed end panels; lapped, glued and screwed to front bottom rail; and glued and screwed to each end panel and the back.
- c. Backs are recessed and let into routed end panels, and further secured with glue blocks on each side. Exterior hanger rails, at the top of the back, are glued to the back and then screwed to the bottom panel and end panels.
- d. Adjustable shelves are supported on heavy-duty, plastic coated, brass plated steel shelf clips.

D. Drawer Components:

1. Drawer front: ½” 5-ply solid core plywood.
2. Drawer box: front, sides and back, 7/16” thick 5-ply solid oak plywood.
3. Drawer bottom: ¼” service tempered hardboard.
4. Drawer Construction:
  - a. Drawer front overlaps the opening ¼” on all sides and has slightly machined radiused, square edges. Drawer fronts are one piece of lumber, whenever possible, providing consistency in color and grain within each drawer front. Drawers are box type with an applied drawer front securely screwed to the box.
  - b. The top edge of the drawer box front, sides and back are radiused. Sides, back and front of the box have corners that are dovetailed and glued.
  - c. The bottom is let into the box on four sides and securely glued underneath with a continuous bead of glue around the perimeter of the drawer bottom.
  - d. In cabinets 24” or less in width, drawers have one, AL-1 aluminum pull which is surface mounted with 2 screws, 4 inches o.c. Drawers larger than 24” wide are to have two aluminum pulls.

- e. Drawers are supported on epoxy coated metal slides and have 100 lbs. load capacity.
- f. All drawer cabinets to have disk tumbler locks with die cast sleeves and cylinders with a satin nickel face and zinc plated steel cams. All rooms are to be keyed alike so each room drawer of the same number is to be alike. Each lock in all rooms is to be supplied with six (6) cut keys. There is to be a master key with four (4) cut master keys. Lock SL-1 is furnished when indicated.

E. Solid Doors, Hinged (48" or less in height) Components:

- 1. 3/4" hardwood core with cross bands of 1/20" poplar exterior face of 1/32" thick plain sliced select grade 1 oak and back face of 1/32" thick sound oak.
- 2. Solid Door construction (48 inches or less in height)
  - a. Hinged solid doors, 48 inches or less in height, are 13/16" thick and have solid oak rails on the four edges. Doors overlap the opening 1/4" on all sides and have slightly radiused, squared edges.
  - b. Doors have one AL-1 aluminum pull which is surfaced mounted with two screws. Doors have two, SS-1 stainless steel, heavy duty, institutional type, 5-knuckle offset type hinges, each attached with 5 tempered steel screws into solid oak framing of door, and 4 Euro screws into the end panel.
  - c. Doors are secured by a zinc plated steel friction roller catch, with a positive action, spring cushioned, polyethylene roller and a metal strike plate. On cabinets, the left door is secured with a steel, spring loaded, elbow catch.
  - d. Strike plate screw holes are slotted for adjustability and a pin hole is provided to help anchor plate's position.
  - e. Lock SL-1 is to be furnished where indicated.

F. Glazed doors hinged (48" or less in height) Components:

- 1. Frame: 3/4" by 3-3/16", solid oak framing.
- 2. Glass: 1/8" thick DSB glass.
- 3. Glazed Doors, Siding Construction:
  - a. Siding glazed doors, 48" or less in height, are solid oak frames with joints multiple doweled and glued. The balance of the door is glass.
  - b. Doors have one AL-1 aluminum pull which is surfaced mounted with two screws. Doors have two, SS-1 stainless steel, heavy duty, institutional type, 5-knuckle offset type hinges, each attached with

5 tempered steel screws into solid oak framing of door, and 4 Euro screws into the end panel.

- c. Doors are secured by a zinc plated steel friction roller catch, with a positive action, spring cushioned, polyethylene roller and a metal strike plate. On cabinets, the left door is secured with a steel, spring loaded, elbow catch.
- d. Strike plate screw holes are slotted for adjustability and a pin hole is provided to help anchor plate's position.
- e. Lock SL-1 is to be furnished where indicated.

G. Pegboards

- 1. Board: epoxy resin board finished on face and edges were exposed.
- 2. Overall dimensions: size as indicated on drawings.
- 3. Polypropylene pegs.
- 4. Stainless Steel Drip Trough: size 1-1/2" w x 3/4" d x 32" l. Lip size: 1" w, trough is fabricated from 22 gauge stainless steel with 3/8" o.d. x 3/4" long copper drain stub.

2.04 HARDWARE AND ACCESSORIES:

A. Pulls

- 1. Pull AL-1 is a satin lacquer finished, extruded aluminum rod, 3/8" in diameter. Pull is mounted with two screws, 4" o.c. and projects 1-5/16" from the surface.

B. Handles

- 1. Latching handle LH-1 is die cast zinc alloy, 4-1/4" long, streamline in design, and has a dull chrome plated finish. Handle operates with 1/4 turn. Double door cases have latching handles on the right door and dummy handles on the left door. A three point latching system provides a positive engagement at the top and bottom of the door with tapered aluminum rods which pull the door snug when they engage plastic strikes. The rods are 5/16" in diameter and move in nylon guides attached to the back of the door. The middle of the door is secured by a latch plate which engages the side of the case, or latches behind the left door on cases with double doors.
- 2. Locking handle LK-1, furnished where indicated, is a latching handle with a lock mechanism incorporated into the handle head. On double door cases, the left door has a dummy handle, and the right door has the locking handle.

C. Locks

1. Lock SL-1 is a laboratory grade, cylinder cam lock with a 5-disc tumbler mechanism, and a dull chrome plated face. Tumblers and keys are brass, while plug and cylinder are die cast zinc alloy. A 180 degree turn of the key moves the lock cam into, or out of, a slot cut to receive it. There are 500 key changes standard. Locks are keyed differently, master keyed and furnished with 2 keys per lock. Locks and corresponding keys are alpha-numerically coded for a quick match. Locks to be furnished and installed as indicated on contract drawings.

D. Hinges

1. Hinge SS-1 is heavy duty, institutional type, 5-knuckly hospital tipped, and made from .083" thick, stainless steel. Hinge is semi-concealed and 2-1/2" high and has off-set. Each wing for the door has 3 holes, one of which is slotted for adjustability.

E. Catches

1. Friction roller catch is a zinc plated steel catch with a positive action, spring cushioned, polyethylene roller, and a metal strike plate. Screw mounted catch and strike plate have slotted holes for adjustability.
2. Elbow catch is a steel, spring loaded catch that releases with finger pressure. The catch and steel strike plate are mounted with screws. Strike plate screw holes are slotted for adjustability and pin hole is provided to help anchor its position.

F. Drawer Slides

1. Drawer slides DS-1 are epoxy coated zinc plated, cold rolled steel, heavy-duty, side mounted, and have a 100 lb. load capacity. They are equipped with heavy-duty, ball bearing nylon rollers for smooth effortless operation. Slides have automated positive stop levers to prevent accidental drawer removal, but allow quick removal without tools.

G. Sliding Door Track Assemblies

1. Sliding door track assembly has an overhead aluminum track and adjustable, nylon roller hangers. The lipped edge of the upper aluminum track prevents rollers from jumping track. Two hard plastic guides are mounted on the bottom interior of the door, and operate in recessed aluminum channels.

H. Shelf Clips

1. Shelf clips are made from steel, then brass plated after fabrication. Clips are angle type with a 1/4" diameter, 3/8" long stud which fits into holes



drilled 32mm o.c. The ¾” long ledge is dipped in a non-slip plastic coating, and has a predrilled hole to anchor shelf to the clip, if desired.

## 2.05 MECHANICAL SERVICE FIXTURES:

- A. Service Fixtures: Sinks and fixtures for water, gas, steam, or other services, are specified in plumbing specifications Division 15.
- B. Electrical fixtures are specified in Electrical Specifications Division 16.

## 2.06 CASEWORK FINISH:

- A. Surfaces to be finished:
  - 1. Exposed exterior surfaces, exposed interior surfaces of cabinets, and the inside of drawers receive the full twelve step finishing process.
  - 2. The unexposed interior surfaces of cupboards, wall cases, and tall cases also receive the full finishing process.
  - 3. Other unexposed surfaces are processed through eight of the finishing steps, which include a baked-on protective coat of moisture and chemical resistant catalyzed sealer.
- B. Finishing Process
  - 1. Prior to assembly, lumber for doors, drawers and cabinets, and plywood for cabinets, are machine sanded with 120 grit, 180 grit, and finally, 220 grit sandpaper. Flat surfaces receive two additional machine sandings: one in an orbital crossbelt sander with 40 micron and 60 micron grit sanding belts; and, one through a rotary polisher with 150 grit sandpaper. Door and drawer front edges are machine sanded to a very smooth surface through a profile edge sander utilizing a 100 grit and a 150 grit paper.
  - 2. After assembly, drawers, doors, and casework are thoroughly examined and fine-finished by hand to provide a consistently smooth surface.
  - 3. Prior to the first application in the finishing process, items are placed in the dust-off booth where compressed air is used to remove loose fibers and dust. Selected surfaces are stained with NGR stain to be desired color and allowed to dry.
  - 4. Next a protective coat of moisture and chemical resistant, catalyzed sealer is applied.
  - 5. After flash drying, items are oven baked at 130 degrees F.

6. Following a cool down period, surfaces that receive the final top coat are carefully hand sanded and wiped clean. A top coat of clear, catalyzed, conversion varnish is applied, allowed to dry, and then baked at 130 degrees F.
7. The final top coat provides chemical resistance, toughness, durability, and excellent color stability with a smooth finish and high-gloss luster.

C. Chemical Resistance

1. The finish of exposed surfaces is capable of withstanding the following chemicals with no effect:

Acetic Acid – 50%	Methyl Ethyl Ketone
Acetic Acid – 98%	Naptha
Acetone	Nitric Acid – 10%
Ammonium Hydroxide – 28%	Phosphoric Acid – 25%
Benzene	Phosphoric Acid – 75%
Carbon Tetrachloride	Potassium Hydroxide – 50%
Ethyl Acetate	Sodium Carbonate – Saturate
Ethyl Alcohol	Sodium Hydroxide – 10%
Ethyl Ether	Sodium Hydroxide – 20%
Formaldehyde	Sodium Hydroxide – 40%
Gasoline	Sulfuric Acid – 25%
Hydrochloric Acid – 10%	Toluene
Hydrochloric Acid – 20%	Xylene
Hydrochloric Acid – 37%	
Methanol (Methyl Alcohol)	

2. Acids that have little to moderate effect on the finish of exposed surfaces are:

Nitric Acid – 30%
Sulfuric Acid – 70%

2.07 EPOXY RESIN WORK SURFACE:

- A. Epoxy resin solid composite with optimum physical and chemical resistance, tops and backsplashes of 1” thickness. The specially compounded and cured uniform mixture, throughout the thickness of the top, is not dependent on a surface coating for chemical, or stain, resistance. Standard color is non-glaring black; exposed edges and corners are radiused, and a drip groove is provided on the under surface. All exposed edges to be finished with a 1/8” bevel.
- B. Each top’s thickness shall not deviate more than plus or minus 1/32” (.793mm) from normal.

- C. Tops shall have uniform flatness acceptable use if there is no gap exceeding 1/16" in a 36" span or a 3/32" in a 96" span.
- D. All edges and surfaces shall be scratch, chip, and chemical resistant.
- E. Backsplash curb: Same material as top 5/8" high, butt jointed and cemented to top. Provide where indicated on drawings and where tops abut wall surfaces and at reagent ledges. Include end curb where top abuts end wall.
- F. Marine edge: If noted, 1/4" spill edge around counter.
- G. Fume Hood tops shall be dished a minimum of 1/4" to contain spills.
- H. Lab sink: Same material as top, unless otherwise noted, under mounted cemented to top. The sink is to be provided with drain and tail pipe.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION:**

- A. Casework Installation
  - 1. Set casework components plumb, square, and straight with no distortion and securely anchored to building structure. Shim as required using concealed shims.
  - 2. Bolt continuous cabinets together with joints flush, tight and uniform, and with alignment of adjacent units within 1/16" tolerance.
  - 3. Secure wall cabinets to solid supporting material, not to plaster, lath or gypsum board.
  - 4. Abut top edge surfaces in one true plane. Provide flush joints not to exceed 1/8" between top units.
- B. Work Surface Installation
  - 1. Where required due to field conditions, scribe to abutting surfaces.
  - 2. Only factory prepared field joints, located per approved shop drawings, shall be permitted. Secure joints in field, where practicable, in the same manner as in factory, with dowels, splines, adhesive or fasteners recommended by manufacturer.
  - 3. Secure work surfaces to casework with material and procedures recommended by the manufacturer.

4. Sink and Service Fittings Installation: Provide holes and cutouts in casework and tops for items to be installed by other trades. Installation of epoxy resin sink, faucets, gas fittings by laboratory casework contractor.
5. Accessory installation: Install accessories and fittings in accordance with manufacturer's recommendations. Turn screws to seat flat; do not drive.

### 3.02 ADJUSTING:

- A. Repair or remove and replace defective work, as directed by Owner's representative upon completion of installation.
- B. Adjust doors, drawers, hardware, and other moving or operating parts to function smoothly.

### 3.03 CLEANING:

- A. Clean shop finished casework, touch up as required.
- B. Clean counter tops with diluted dishwashing liquid and water leaving tops free of all grease and streaks. Use no wax or oils.

### 3.04 PROTECTION OF FINISHED WORK:

- A. Provide all necessary protective measures to prevent exposure of casework, tops, and accessories from exposure to other construction activity.
- B. Advise contractor of procedures and precautions for protection of material from damage by work of other trades.

END OF SECTION