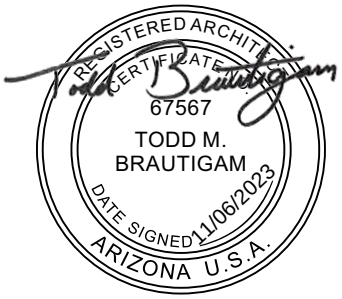
PROJECT MANUAL FOR:

Lake Havasu City
Police Department Remodel

2360 McCulloch Blvd. N
Lake Havasu City, Arizona 86403



PREPARED BY:

SELBERG ASSOCIATES, INC.
ARCHITECTURE & PLANNING

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LHC Police Department Remodel
September 29, 2023

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SECTION 01 11 00
SUMMARY OF WORK

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. Project: This project consists of corrective actions recommended for the subject building to renovate the property for code compliance, demolition and upgrade of first floor restrooms floor and wall tile, restoration of footing at exterior column and perimeter walls, bullet resistant window replacement, hardware replacement on twenty nine sliding doors in the Jail facility with AirTeq Slider Mechanism, rekeying of fifty seven Locks with AirTeq locks and PLC Licenses (software system upgrade), new flooring and paint in jail area, new cabinetry in first floor, plumbing fixture replacement and sewer system repair, and electrical work related to these items.

1.2 DEFINITIONS PERTAINING TO THE CONTRACT DOCUMENTS

A. Furnish: To purchase and deliver.
B. Install: To place into final position and connect.
C. Provide: To furnish and install.
D. Connect: To make the complete necessary utility connection (water, sewer, gas, electricity, etc.) from the building utility to the piece of equipment to allow that piece of equipment to function as intended (e.g., a gas connection for an oven or cooktop).
E. "As shown", "as detailed", "as indicated" or words of similar import mean as indicated on the drawings.
F. "As selected", "as approved" or words of similar import mean as selected by, as approved by, or as accepted by the Architect and Owner.
G. "Approved equal", "or equal" shall mean as approved and accepted by the Architect and Owner.
H. "Shall" means mandatory.
I. "As required" means as required by the contract documents.
J. "As necessary" means essential to the completion of the work.
K. "Concealed" means not visible in the finished work.
L. "Exposed" means visible in the finished work.
M. "Days" means calendar days.
N. "Working Days" means workdays and does not include legal holidays.
O. Substantial Completion: That stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

1.3 OWNER FURNISHED AND INSTALLED ITEMS

A. General: The terms "Furnish," "Install," and "Connect" shall be as defined in Article 1.02 of this Section.
B. Items furnished and installed by Owner, or by Owner's separate Vendor(s): Refer to Drawings for items to be Owner Furnished and Installed.
C. Contractor's Responsibilities:
    1. Contractor shall give Owner written notice, stating date(s) when Owner-Furnished items must be received at the job site to insure Project completion in accordance with established schedule. Such dates shall be shown on the schedule.
    2. Contractor is responsible for the coordination and interface of Owner-Furnished and Installed items with Work of this Contract to provide all necessary mechanical and electrical rough-ins, openings, supports, dimensions, etc., as necessary for a complete installation.

1.4 OWNER-FURNISHED, CONTRACTOR INSTALLED ITEMS

A. General: The terms "Furnish," "Install," and "Connect" shall be as defined in Paragraph
1.03 of this Section.

B. Items furnished by Owner and installed by Contractor: Refer to Architectural Drawings and Interior Drawings and Specifications for items to be Owner Furnished for Installation by Contractor.

C. Owner's Responsibilities:
   1. Arrange for and deliver Owner reviewed Shop Drawings, Product Data, and Samples, to Contractor.
   2. Arrange and pay for product delivery to site.
   3. On delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   5. Arrange for Manufacturers' warranties, inspections, and service.

D. Contractor's Responsibilities:
   1. Contractor shall provide a written schedule to the Owner, indicating when Owner- furnished items must be received at the job site to insure Project completion in accordance with established schedule. Such dates shall be shown on the schedule.
   2. Review Owner-reviewed Shop Drawings, Product data, and Samples
   3. Receive and unload products at site; inspect for completeness or damage, jointly with Owner.
   4. Handle, store, assemble, install, protect, connect and finish such products, including furnishing lubricants and fluids and procedures necessary to render product serviceable and operative.
   5. Contractor is responsible for the coordination and interface of Owner-Furnished items to provide all necessary mechanical and electrical rough-ins, openings, supports, dimensions, etc., as necessary for a complete installation.

1.5 CONTRACTOR USE OF SITE

A. General: Contractor shall have full use of the site within Contract Limit Lines indicated for construction operations during the construction period.
   1. Special care shall be taken to secure the site within the Contract Limit Lines to prevent access by the general public.

B. Contractor shall coordinate and allow use of site by Owner or Owner’s separate contractors for items identified in Article 1.03 of this Section.

C. Emergency Building Exits During Construction: Comply with Code requirements for exiting requirements during construction. Exit doors and pathways indicated on drawings shall be maintained during the entire course of construction.

1.6 PERMITS, FEES, AND NOTICES

A. Plan check fees have been paid by the Owner.

B. The Contractor shall secure and pay for the building permit and for other permits and governmental fees, licenses, and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract, and which are legally required at the time the bids are received or negotiations concluded. This shall include, but not be limited to:
   1. Building Permit from the Lake Havasu City Building Department.
   2. Inspections and Certificates from State Fire Marshal and County Health Department.
   3. Other Permits may be imposed by agencies having authority.
   4. Utility connection and service fees.

C. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the performance of the Work.

D. It is not the responsibility of the Contractor to make certain that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, he shall promptly notify the Architect and Owner in

writing, and any necessary changes shall be accomplished by appropriate Modification.

E. If the Contractor performs Work knowing it to be contrary to such laws, ordinances, rules and regulations, including, but not limited to the following, and without such notice to the Architect and Owner, the Contractor shall assume full responsibility therefore and shall bear attributable costs. Work shall comply with the following:
   1. Codes, Ordinances, Rules and Regulations, as adopted:
      a. 2018 International Building Code with local amendments
      b. 2018 International Mechanical Code with local amendments
      c. 2018 International Plumbing Code with local amendments
      d. 2017 National Electrical Code with local amendments
      e. 2018 International Fire Code with local amendments
      f. ICC/ANSI A117.1, 2009 "Accessible and Usable Buildings and Facilities" (includes ramp slopes, mounting heights, wheelchair clearances, door clearances, slip resistance for floors, stairs and ramps, opening/operating force for doors, sill heights, etc.)
      g. 2010 ADA Standards for Accessible Design
   2. Contractor shall maintain current copies of each of the codes listed in 1.04, D, 1. on-site and available for use at the Contractors field office.

1.7 SPECIAL SITE CONDITIONS

A. The Contractor shall be completely responsible for protecting any existing site and street improvements, including utilities indicated to remain and adjacent to new construction from damage and/or injury due to this Work and shall repair at his expense and to the Architect's satisfaction, all areas damaged as a result of his Work.

1.8 ARCHITECTURAL BARRIERS

A. It is the desire of the Owner that the facilities and improvements constructed under this Contract meet or exceed the intent of applicable public law concerning prohibition of discrimination, and that no individual be discriminated against on the basis of disability in the full and equal enjoyment of the goods, services, facilities, privileges, advantages, or accommodations of this completed Project.

B. The designers and drafters of these Documents have intended to incorporate those Owner's intentions into these Documents.

C. It is recognized that there may be products not incorporated into these Documents that may more nearly meet the Owner's desires than those included.

D. The Owner hereby solicits those providing elements of this Project to bid and contract for the Project as required by these Documents, but at the time of submitting Shop Drawings, or sooner when appropriate, and without causing delay in the Project, to also submit proposals for improving the accessibility of the Project to physically or mentally impaired persons.

1.9 REPRODUCTION OF DRAWINGS

A. Contractor shall not alter the size of Drawings when making or ordering reproductions.

B. Only full-size, current Drawings shall be maintained at the Project Site.

1.10 COMMUNICATIONS

A. All communications with the Architect shall be copied to the Owner’s Representative.

B. All communications with the Architect's consultants shall be through the Architect.

1.12 CONTRACTORS USE OF ARCHITECTS DIGITAL DATA

A. Refer to Section 01 33 00 – Submittal Procedures.

END OF SECTION

SECTION 01 12 16
WORK SEQUENCE

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Summary of Work - Section 01 11 00.
B. Contractor's Use of Premises - Section 01 14 19.
C. Project Meetings – Section 01 31 19.
D. Project Closeout - Section 01 77 00.

1.02 WORK SEQUENCE

A. Construction work of this contract shall begin on or before a date to be specified in a written Notice to Proceed to the Contractor and issued by the Owner.
B. Completion of the Work: Upon receipt of written Notice to Proceed work shall continue without interruption until final completion and within the stipulated calendar days defined under the Instructions for Bidders.
C. Allow volatile materials such as paints and sealants to dry before installing products that could trap volatile organic compounds in their materials. Such products include, but are not limited to, carpet and ceiling tiles.

PART 2 - PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION

SECTION 01 14 19
CONTRACTOR'S USE OF PREMISES

PART 1 - GENERAL

1.01 REQUIREMENT

A. Confine operations at site to areas permitted by:
   1. Permits.
   2. Contract Documents.

B. Do not unreasonably encumber the site with materials and equipment.

C. Assume full responsibility for protection and safekeeping of products stored on premises.

D. Do not load the structure with weight that will endanger the structure.

E. Obtain and pay for use of additional storage or work areas needed for operations.

F. Limit Use of Site for Work and Storage: Limit outside construction activities to area designated on the drawings.

G. Seal off and fence off areas during construction for security and to prevent dust particles and noise from entering adjacent areas occupied by the Owner. A maximum noise rating of 35 will be allowed during business hours.
   1. Noise rating meets the noise criterion level of NC 30-35 and shall not exceed 45 dB(A), or the equivalency of a small office, classroom, or courtroom.

H. Smoking is prohibited anywhere within the building and anywhere on the site unless a specific designated smoking area is approved by the Owner.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 25 00
SUBSTITUTIONS

PART 1 - GENERAL

1.01 PRODUCT OPTIONS

A. Substitutions shall be per this Section, Section 013323, and the General Conditions.

B. No substitutions will be considered during the bidding phase.

C. No substitutions will be considered during construction unless a written request for approval has been submitted in accordance with the requirements as stated in the Instructions to Bidders.

D. Product List: Submit to the Owner and the Architect a complete list of major products proposed to be used that deviate from the Contract Documents, with the name of the manufacturer, product, and the installing subcontractor.

1. Substitutions not included in the list will not be accepted, unless approved in writing by the Owner.

E. Contractor's Options:

1. For products specified only by reference standard, select any product meeting that standard.
2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.
3. For products specified by naming one or more products or manufacturers and "or approved equal", the Contractor must submit a written request for any product or manufacturer not specifically named in accordance with this Section and the General Conditions.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 26 13
REQUESTS FOR INTERPRETATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative requirements for requests for information / interpretation.

1.2 DEFINITIONS

A. Request For Information / Interpretation (RFI):

1. A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as RFI.
2. A properly prepared request for information / interpretation shall include a detailed written statement that indicates the specific Drawings or Specification in need of clarification and the nature of the clarification requested.
   a. Drawings shall be identified by drawing number and location on the drawing sheet.
   b. Specifications shall be identified by Section number, page, and paragraph.
3. Requests for Information: Request made by Contractor concerning items not indicated on Drawings or contained in the Project Manual that is necessary to properly perform the Work.
4. Requests for Interpretation: Request made by Contractor in accordance with Owner's Representative's third-party obligations to the contract for construction.

B. Improper RFI's:

1. RFI's that are not properly prepared.
2. Improper RFI's will be processed by the Architect at the Architect's standard hourly rate and Architect will charge the Owner, and such costs will be deducted from monies still due the Contractor. The Contractor will be notified by the Architect prior to the processing of improper RFI's.

C. Frivolous RFI's:

1. RFI's that request information that is clearly shown on the Contract Documents.
2. Frivolous RFI's may be returned unanswered or may be processed by the Architect at the Architect's standard hourly rate and Architect will charge the Owner, and such costs will be deducted from monies still due the Contractor. The Contractor will be notified by the Architect prior to the processing of frivolous RFI's.

1.3 CONTRACTOR'S REQUESTS FOR INFORMATION

A. RFI's shall be submitted on a form prepared by the Contractor and approved by the Architect prior to use.

1. Forms shall be completely filled in, and if prepared by hand, shall be fully legible.
2. RFI's shall be submitted in numerical order with no breaks in the consecutive numbering.
3. Each page of attachments to RFI's shall bear the RFI number and shall be consecutively numbered in chronological order.

4. RFI's shall be submitted by E-Mail or digital file transfer.
    a. Address for E-Mail will be distributed by the Architect at the Pre-Construction Conference.

B. When the Contractor is unable to determine from the Contract Documents, the material, process or system to be installed, the Architect shall be requested to make a clarification of the indeterminate item.
1. Whenever possible, such clarification shall be requested at the next appropriate Project Meeting, with the response entered into the meeting minutes. When clarification at the meeting is not possible, either because of the urgency of the need, or the complexity of the item, Contractor shall prepare and submit an RFI to the Architect.
2. RFI's may not be sent directly to the Architect's Consultants. All RFI's shall be sent directly to the Architect.

C. Contractor shall endeavor to keep the number of RFI's to a minimum. In the event that the process becomes unwieldy, in the opinion of the Architect, because of the number and frequency of RFI's submitted, the Architect may require the Contractor to abandon the process and submit future requests as either submittals, substitutions or requests for change.

D. RFI's shall be originated by the Contractor.
1. RFI's from subcontractors or material suppliers shall be submitted through, reviewed by, and signed by the Contractor prior to submittal to the Architect.
2. RFI's from subcontractors or material suppliers sent directly to the Owner's Representative, Architect or the Architect's consultants shall not be accepted and will be returned unanswered.

E. Contractor shall carefully study the Contract Documents to assure that the requested information is not available therein. RFI's which request information available in the Contract Documents will be deemed either "improper" or "frivolous" as noted above.

F. In cases where RFI's are issued to request clarification of coordination issues, for example, pipe and duct routing, clearances, specific locations of work shown diagrammatically, and similar items, the Contractor shall fully lay out a suggested solution using drawings or sketches drawn to scale and submit same with the RFI. RFI's which fail to include a suggested solution will be returned unanswered with a requirement that the Contractor submit a complete request.

G. RFI's shall not be used for the following purposes:
1. To request approval of submittals
2. To request approval of substitutions,
3. To request changes which are known to entail additional cost or credit. (A Change Order Request form shall be used.)
4. To request different methods of performing work than those drawn and specified.

H. In the event the Contractor believes that an RFI response by the Architect results in additional cost or time, Contractor shall not proceed with the work indicated by the RFI until a Change Order (or Construction Change Directive, if applicable to the Project) is prepared and approved. RFI's shall not automatically justify a cost increase in the work or a change in the Project schedule.
1. Answered RFI's shall not be construed as approval to perform extra work.
2. Unanswered RFI's will be returned with a stamp or notation "Not Reviewed".

I. Contractor shall prepare and maintain a log of RFI'S, and at any time requested by the Architect, Contractor shall furnish copies of the log showing outstanding RFI'S. Contractor shall note unanswered RFI's in the log.

J. Contractor shall allow up to 5 working days review and response time for RFI'S, unless review is required of multiple consultants, then the review and response period shall be 7 working days.
   1. The Architect will endeavor to respond to RFI's in a timely manner.
   2. RFI shall state requested date/time for response, however, this requested date/time for response is not a guarantee that the RFI will be answered by that date/time if that date/time is too expeditious.
   3. Architect may request additional time when deemed necessary.

1.4 ARCHITECT'S RESPONSE TO RFI'S

A. Architect will respond to RFI's as follows:
   1. Answers to properly prepared RFI's will be made directly upon the RFI form and will be returned via E-Mail or digital file transfer. Architects' response may include supplemental information such as Drawings, Sketches, Supplementary Instructions, Product Data Sheets, Specifications, etc. as deemed necessary to provide requested information.
   2. Improper or Frivolous RFI's
      a. Notification of Processing Fee(s).
      b. Unanswered RFI's will be returned with a stamp or notation: "Not Reviewed."

B. Architect may opt to retain RFI's for discussion during regularly scheduled project meetings for inclusion of responses in meeting minutes in lieu of responding on a written form.

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

1.1 SCHEDULE OF VALUES

A. With the first Application for Payment, submit three (3) copies of completed AIA Document G703 Continuation Sheet indicating the scheduled value of major categories and subcontracts for the Work, for approval of the Architect.

B. For each item, provide a column for listing:

1. Item number
2. Description of Work
3. Scheduled Value
4. Previous Applications
5. Work in Place and Stored Materials under this Application
6. Authorized Change Orders
7. Total Completed and Stored to Date of Application
8. Percentage of Completion
9. Balance to Finish
10. Retainage.

1.2 PAY REQUEST

A. The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by approved AIA Document G703, Continuation Sheet. A minimum of three (3) original copies of these forms shall be submitted for each application. Submit additional copies if requested by the Owner or Architect.

1. Present required information in typewritten form or on electronic media printout.
2. Execute certification by signature of authorized officer.
3. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
4. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.

B. With each Application for Payment submit lien releases for the previous payment, substantiation for stored materials, monthly progress reports and updates, and any other pertinent items required by the Owner or Architect and identified during the Pre-Construction Conference.

1. AIA Documents G706, Contractor's Affidavit of Payment of Debts and Claims, G706-A, Contractor's Affidavit of Release of Liens, Documents G707, Consent of Surety Company to Final Payment shall be used.
2. If appropriate, G707-A, Consent of Surety to Reduction in or Partial Release of Retainage shall be used.

C. When acceptable to the Owner, the Contractor may submit for payment on properly stored materials not yet incorporated into the work. Materials stored on the site must be in a secured area and be protected from damage, weather, theft or vandalism. The Contractor shall be responsible for replacing any damaged or missing materials.

D. Materials stored off the job site must be in the supplier's storage area, separated from other materials, and clearly labeled for this particular project. Insurance certificates for the material naming the Owner as an additional insured, loss payee shall be delivered with the pay request.

END OF SECTION

SECTION 01 29 73
SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 REQUIREMENT

A. Submit to the Owner and the Architect a schedule of values allocated to the various portions of the work within ten (10) days after receipt of Notice to Proceed.

B. Upon request of the Owner, provide support for the values with data which will substantiate their correctness.

C. The schedule of values, unless objected to by the Architect or the Owner, shall be used only as the basis for the progress schedule and the Contractor's application for payment.

1.02 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type the schedule on 8-1/2" x 11" white paper. Identify schedule with the following:
   1. Project title and number.
   2. Location.
   3. Name and address of the Contractor.
   4. Architect and Owner.
   5. Date of submission.

B. The schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.

C. Follow the index of specifications of this Project Manual as format for listing component items. Identify each line item with the number and title of the respective major section of the specifications.

D. For each major line-item list sub-values of major products or portions under the item.

E. For various portions of the work, each item shall include a directly proportional amount of the contractor's overhead and profit, mobilization, and preparatory costs.

F. The sum of all values listed in the schedule shall equal the total contract sum.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 29 76
APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENT

A. Submit applications for payment to the Architect in accordance with the schedule established by the General Conditions and the Contract Agreement between the Owner and the Contractor.
   1. Per the General Conditions, only materials installed shall be submitted for payment. All items purchased but not installed shall be listed on the continuation sheet but shall not be included in the total completed column.

B. Related requirements specified in other sections.
   1. Summary of Work – Section 011100.
   2. Progress Schedule – Section 013216.
   3. Schedule of Values - Section 012973.
   4. Project Closeout - Section 017700.
   5. Construction Waste Management – Section 017419.

1.02 FORMAT AND DATA REQUIRED

A. Submit itemized applications typed on AIA Document G702, Application and Certificate for Payment, and Continuation Sheet(s), AIA Document G703.

B. Modifications to G702: Line item 4 to read Total Completed to Date. Insert amount in Column E of G703.

C. Contractor shall fill in all columns on G703 completely, including column F and G for project progress tracking purposes only.

1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form.
   1. Fill in required information, including closing date of the submitted application.
   2. Fill in summary of dollar values to agree with the respective totals indicated on the continuation sheets.
      a. Per the General Conditions, only materials installed shall be submitted for payment.
   3. Execute certification with the signature of a responsible officer of the Contractor.

B. Continuation Sheet(s).
   1. Fill in total list of all scheduled component items of the work, with item numbers and the scheduled dollar value for each item.
   2. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored. Round off values to nearest dollar.
   3. List each change order fully executed prior to the closing date of the submission at the end of the continuation sheets.
   4. List by change order the order number and description as for an original component of work.

C. Certificate for Payment.
   1. The Architect shall fill in the Architect's Certificate for Payment section after reviewing the G702 for completeness and correctness and verifying that the county has initialed and dated the G702.
   2. The completed Certificate for Payment should include the typed corporation name and representative's signature of both the Architect and the Contractor. The date here is to be the date each signature is affixed.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. The G703 shall indicate the monthly status of all materials, both installed on the project and stored on the site. The Owner shall conduct a visual inspection, at their discretion, to determine the accuracy of the form.

B. Those items stored on site, for which Owner provides written approval, may be included with that month's application for payment

C. Submit updated progress schedule with each application for payment.

1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in the application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting.

1.06 SUBMITTAL PROCEDURE

A. Submit completed Application for Payment to the Architect at the times stipulated in the Agreement.

B. When the Architect finds the application properly completed and correct, he will sign the Certificate for Payment and transmit it to the Owner for payment.

C. Number of copies of each application and certificate for payment shall be determined by the Owner.

D. The Contractor and the Architect must coordinate the processing of the Application and Certificate so that the properly executed documents are received by the Owner by a day or date determined by the Owner.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

PART 1 - GENERAL

1.01 REQUIREMENT

A. The General Contractor shall coordinate the work of all trades and all subcontractors on the job. It shall be his responsibility to see that all aspects of the work and the interrelationship of all work be fully understood by all persons performing any part of the work. No additional cost shall accrue to the Owner because of any lack of such coordination of understanding.

B. The General Contractor shall be responsible for the coordination of the various trades to prevent work-related contaminants from spreading to finished or occupied areas.

1.02 SCHEDULING

A. The General Contractor shall be responsible for scheduling utility tie-ins and service as required.

B. In the event the Owner is required to participate in applications or permits with respect to utility connections, the Contractor shall so advise the Owner to assist in the submission of forms. The Contractor shall be responsible for paying for any fees associated with the forms.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 GENERAL

1.01 PRECONSTRUCTION CONFERENCE

A. A Preconstruction Conference to discuss the Project work will be held at a time and location designated by the Owner.

B. Contractor, and representatives of major Subcontractors, shall meet with Owner and Architect. The purpose of this conference is to discuss the Project in detail, including scheduling of Work, and to answer questions. Unless followed up in writing, verbal authorizations or acknowledgement of those present are not binding.

C. Meeting minutes will be taken by the Contractor for distribution to all attendees within 48 hours of conference.

1.02 PROGRESS MEETINGS

A. At times designated by Owner, regular weekly Progress Meetings will be held at Project site. These meetings and minutes from same, to be organized and managed by the Contractor.

B. Contractor and representatives of major Subcontractors shall meet with Owner and Architect.

C. Contractor is responsible for notifying Subcontractors of their required attendance. These meetings will address progress of the Work and problems that may have developed since the previous meeting.

D. Agenda for meetings shall include:

1. Review of RFI Log.
2. Review of Submittal Log and upcoming Submittals.
3. Review of Sketch Log.
4. Field Report action items.
5. Status of mockups and approvals (especially Owner approvals).
6. Project overall and look-ahead schedule including critical path items (requisitions, decision points).
7. Permits for deferred items (including off-site / street utility work).
8. BIM Coordination: If Contractor will be maintaining an on-site BIM model, then an up-to-date version shall be available for review and discussion at project meetings.

E. Unless followed up in writing, verbal authorizations or acknowledgements by those present are not binding.

F. Meeting minutes will be taken by the Contractor for distribution to all attendees within 48 hours of each meeting.

END OF SECTION

SECTION 01 32 16
PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 REQUIREMENT

A. Within ten (10) days after approval of the Schedule of Values, submit a preliminary progress schedule covering the full term of construction for the work for review by the Architect and Owner.

B. Submit revised progress schedules periodically, as necessary.

C. Related requirements specified in other sections:

1. Summary of the Work - Section 011100.
2. Shop Drawings, Product Data and Samples-Section 013323.
3. Schedule of Values - Section 012973.

1.02 FORM OF SCHEDULE

A. Prepare a schedule in the form of a horizontal bar chart.

1. Provide separate horizontal scheduled progress bar for each trade or operation.
2. Horizontal time scale: Identify the first workday of each month.
3. Scale and spacing: To allow for actual progress bar, notations, and future revisions.
4. Sheet size: Approximately 24" x 36".

B. Format of Listings: The Index of Specifications of this Project Manual.

C. Identification of Listings: By major specification, six-digit section numbers.

1.03 CONTENT OF SCHEDULE

A. Show the complete sequence of construction by activity.

B. Show the dates for the beginning and completion of each major element of construction.

C. Show projected percentage of completion for each item as of the first workday of each month.

D. Show projected percentage of completion for the total Work as of the first workday of each month.

1.04 PROGRESS REVISIONS

A. Indicate the progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule.

C. Provide a narrative report, as needed, to define:

1. Problem areas, anticipated delays, and the impact on the schedule.
2. Corrective action recommended and its effect.

1.05 SUBMISSIONS

A. Submit preliminary schedule within ten (10) days of receipt of approval of Schedule of Values.

1. Architect will review schedule in concert with Owner and return review copy within seven (7) days after receipt.
2. If required, resubmit within five (5) days after the return of review copy.

B. Submit schedule electronically in PDF format of the revised progress schedule with each Application for Payment.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 CONTRACTORS USE OF ARCHITECTS DIGITAL DATA

A. General: Electronic copies of digital files of the Construction Documents (Digital Data) may be made available by Architect for Contractor's use in preparing Submittals. The Architect shall not be obligated to make available, nor shall the Contractor be obligated to use such documents in submittal preparation.

1. The use and/or provision of the Digital Data prepared by the Architect and/or its consultants shall not in any way reduce or obviate the Transferee's duty to check and coordinate dimensions, details, member sizes, gauges/thicknesses, quantities of materials, and all other conditions required to facilitate construction of the Project. Confirmation of existing conditions is the sole responsibility of the Transferee.
2. Transfer of digital files from Architect to Contractor shall be subject to the Terms and Conditions of the "Digital Data Letter of Agreement" at time of such transfer.
3. A copy of the Digital Data Letter of Agreement" is included as Appendix "A" to this Section.

1.2 CONSTRUCTION SCHEDULE

A. Submit an electronic copy of the Construction Schedule, broken down by Trade or Material, to the Architect for approval prior to the first Pay Request. Schedule shall be by CPM or bar graph type and shall show proposed starting and completion dates for each Trade and activity for the Work. Submit electronic copies of updated schedule at each Pay Request field review to the Architect.

B. Submit completed construction schedule to Architect no later than 15 calendar days after date of Agreement and update monthly during construction. Submit the current schedule with each application for payment.

C. Submit completed material delivery schedule to the Architect no later than 20 calendar days after the date of the Agreement. Identify material critical to the progress of the Project and those for which long lead time in procurement is anticipated. Indicate projected dates for submittal, order and delivery of such material.

1.3 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Submit the completed schedule of submittals to the Architect no later than 15 calendar days after date of Agreement and update monthly during construction. Submit the current schedule with each application for payment.

B. Shop Drawings:

1. Following Contractor's review and approval, submit to the Architect electronic copy (PDF or similar) of each Drawing for review.
2. The Architect will review the electronic copy and attach an electronic stamp to the electronic copy indicating the findings of the review and will return same to the Contractor via email.
3. Comments, if any, will be noted directly on the transparency using electronic mark-up.
4. The Contractor shall then distribute to the various Trades and to Contractor's job personnel as required.
5. If a submittal is indicated to be corrected and resubmitted, correct and resubmit as outlined above.
6. Fire Alarm System/Fire Sprinklers System Shop Drawings shall be submitted to the state and local Fire Marshal and obtain approval prior to installation. Fire

Marshal inspection, test and approval of completed installations shall be obtained prior to acceptance of the systems and Substantial Completion of the Project.

C. Product Data: Following Contractor's review and approval, submit to the Architect four (4) copies of Manufacturer's catalogs and brochures, or PDF format electronic copy of Manufacturer's catalogs and brochures as required by the Specifications. If electronic copy product data are furnished, all files shall be full size PDF only. Electronic copies shall have model numbers, colors, finishes, accessories, etc. identified using electronic mark- up to clearly indicate materials/products being used. Resubmit corrected copies for approval in accordance with original submittal.

D. Samples:
   1. Following Contractor's review and approval, submit to the Architect samples of materials in quantities and sizes as required by the Specifications. No electronic copy of samples will be considered for review.
   2. Unless otherwise indicated within individual Specification Sections, submit a minimum of four (4) samples of each required material, one each for Architect, Owner, Contractor, and Subcontractor.
   3. Submittals required other than for selection of color, texture, fabric or finish shall be given to the Architect at a time determined by the Contractor, which will allow for resubmittal, and which will not cause and delay in the Work.
   4. Corrected samples shall be resubmitted for approval as per the original submittal.

E. Color Selection: Within 30 days of the date of Agreement, submit to the Architect for approval, samples and appropriate information required for the selection of colors, textures, fabric and finishes for the entire Project. Physical samples shall be submitted for color or material selections. Electronic samples will not be reviewed. Final selection of color, textures, fabrics or finishes will not be made until all applicable and related submittals have been provided. If the Contractor fails to provide the required samples and related information within the time period, the Architect shall have the option of selecting colors, textures, fabric, finishes or specific materials from those specified or approved and the Contractor shall be obligated to provide the material selected by the Architect.

F. Submit Shop Drawings, Product Data and Samples for only those items specifically mentioned in the Specifications and or Addenda. Contractor shall be responsible for obtaining Shop Drawings required for the progress of the Work, even though such Shop Drawings may not require the Architect's review.

G. Partial Submittals: Submittals which are partial or contain only a portion of the data required to describe the item or installation will be rejected, unless such partial submittal is coordinated with the Architect prior to submittal, and final approval of all such items will be withheld pending receipt of all required information.

H. Deviations: All deviations from the Contract Documents shall be clearly identified in the submittal. Submittal shall include only items included in the specifications or which have been approved in advance by the Architect in accordance with requirements of Section 01 60 00. Submittals containing items which have not been approved in advance by the Architect will be rejected.

1.4 QUALITY CONTROL SUBMITTALS

A. Equipment Lists: Following Contractor's review and approval, submit to the Architect a complete list of major items of mechanical, plumbing and electrical equipment and materials, within 30 calendar days after date of Agreement. Submit all items at one time. Partial list will not be acceptable. Submittals shall include the Manufacturer's Specifications, weights, space requirements, physical dimensions, rating of equipment and supplemental information requested by the Architect. Submit performance curves for pumps and fans. Where a submittal sheet describes items in addition to that item being submitted, delete such items. Clearly note equipment and materials which deviate from those shown or specified in size, weight, required clearances, and

location of access. Modifications to the Work as shown or specified in submittals shall be indicated and shall be provided by the Contractor as a part of the Work.

B. Manufacturer's Instructions: Where Specifications require Work to be furnished, installed or performed in accordance with a specified product Manufacturer's instruction, distribute copies of such instructions to concerned parties.

1.5 REVIEW PROCESS

A. All Shop Drawings will be reviewed and returned within 7 working days to the Contractor for distribution to the applicable trades. Shop Drawings for major components of the Work (i.e. Structural Steel) shall be returned within 14 working days.

B. Shop Drawings are to be submitted to the Architect in a reasonable sequenced manner as not to overburden the reviewing discipline. If the Architect feels as though the review of the Submittal is not on the critical path of the Project, then the review may exceed indicated review times.

C. If the corrections identified on the Shop Drawings are not corrected and the review of the same Submittal exceeds two (2) reviews, the Contractor will be billed for additional reviews at the current hourly rate charged by the Architect or his Consultants. This process will require that the Contractor be notified of the charges and an additional Service Work Order be signed prior to the review commencing.

END OF SECTION

Attachments to this Section: Appendix "A" to Section 01 33 00: "Digital Data Letter of Agreement"

SECTION 01 33 23
SHOP DRAWINGS, AND PRODUCT DATA AND SAMPLES

PART 1 – GENERAL

1.01 SHOP DRAWINGS

A. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet and detail, schedule or room areas shown on Contract Drawings.

B. Minimum Sheet Size: 8-1/2" x 11".

1.02 PRODUCT DATA

A. Preparation.

1. Clearly mark each copy to identify pertinent products or models.
2. Show performance characteristics and capacities.
3. Show dimensions and clearances required.
4. Show wiring or piping diagrams and controls.

B. Manufacturer's standard schematic drawings and diagrams.

1. Modify drawings and diagrams to delete information that is not applicable to the work.
2. Supplement standard information to provide information specifically applicable to the work.

1.03 SAMPLES

A. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product with integrally related parts and attachment devices.

1.04 SUBMISSION REQUIREMENTS

A. Make submittals promptly and, in such sequence, as to cause no delay in the work or in the work of any other contractor.

B. Number of Submittals Required.

1. Shop Drawings and Product Data: Submit the number of copies as determined in the pre-construction meeting, one (1) digital copy will be retained by the Architect.
2. Samples: Submit the quantity stated per Section 013300 and in each specification section.

C. Submittals shall contain:

1. The date of submission, and the dates of any previous submissions.
2. The project title and number.
3. Submittal number.
4. Names of the Contractor, Supplier, Manufacturer.
5. Identification of the product with the specification section number.
6. Field dimensions clearly identified as such.
7. Relation to adjacent or critical features of the work or materials.
8. Applicable standards, such as ASTM or Federal Specifications numbers.
9. Identification of deviations from the Contract Documents.
10. Identification of revisions on resubmittals.
11. A 3" x 12" blank space for the Contractor, Architect and Owner stamps.
12. Contractor's stamp, initialed or signed, certifying their review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of the Contract Documents.

1.05 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the Architect or the Owner and resubmit until approved.

B. Shop drawings and product data.
   1. Revise initial drawings or data and resubmit as specified for the initial submittal.
   2. Indicate any changes which have been made other than those requested by the Architect or the Owner.

C. Samples: Submit new samples as required for initial submittal.

1.06 ARCHITECT'S RESPONSIBILITY

A. Review submittals with reasonable promptness.

B. Affix stamp and initials or signature and indicate requirements for re-submittal, or approval of submittal.

C. Return submittals to the Contractor for distribution or resubmission.

PART 2 - PRODUCT

2.01 SUBSTITUTIONS

A. Substitutions shall be per this Section, Section 012500, and the General Conditions. The Contractor shall provide a list of all manufacturer's at the pre-construction conference that were not approved during the bidding phase, or deviate from the Project Manual.

B. Products are generally specified by reference standard, manufacturer's name, model number, or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product or manufacturer listed.

C. Whenever a material, article or piece of equipment is identified on the drawings, or in the specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers or vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or piece of equipment as proposed is, in the opinion of the Architect and the Owner, of equal substance, appearance and function. It shall not be purchased or installed by the Contractor without the Architect's written approval.

D. During the bidding phase, no substitutions will be considered unless received no later than ten (10) calendar days before bidding.

E. After the contract has been executed, a formal request for the substitution of alternate products, not named in the specifications, will be considered in place of those specified, under the following conditions.
   1. The request is accompanied by complete data on the proposed substantiating compliance with the Contract Documents, including product identification and description, performance and test data, references and samples where applicable, and an itemized comparison of the proposed substitution with the products specified or named by addenda, with data relating to contract time schedule, design and artistic effect where applicable, and its relationship to separate contract.
   3. Requests for substitutions, when forwarded by the Contractor to the Architect, are understood to mean that the Contractor:
      a. Represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified.
      b. Will provide at least the same warranty for the substitution that he would for that specified.
      c. Certifies that any cost data presented is complete and includes all related costs under this Contract but excludes costs under

separate contracts and the Architect's re-design costs, and that he waives all claims for additional costs related to the substitution which subsequently become apparent.

d. Will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be completed in all respects.

4. Substitutions will not be considered if:
   a. They are indicated or implied on shop drawing submissions without the formal request required by this Section.
   b. For their implementation they require a substantial revision of the Contract Documents in order to accommodate their use.
5. Substitutions, if acceptable to the Owner and the Architect, will be acknowledged by written approval or incorporated into the Contract Documents by means of a change order.

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 42 00
REFERENCES

1.1 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes. Such Reference Standards are made part of the Contract Documents by reference.
B. Conform to reference standard by date of issue current on date of Contract Documents.
C. Obtain copies of standards when required by Contract Documents.
D. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.2 SCHEDULE OF REFERENCES

A. The following is a partial list of agencies, councils, institutions, associations, and so forth that may be referred to in the Contract Documents. This list is not to be interpreted as being complete.

AA	Aluminum Association	www.aluminum.org
AABC	Associated Air Balance Council	www.aabchq.com
AAMA	American Architectural Manufacturers Association	www.aamanet.org
AASHTO	American Association of State Highway	www.aashto.org
ACI	American Concrete Institute	www.aci-int.org
ADC	Air Diffusion Council	www.flexibleduct.org
AFPA	American Forest and Paper Association	www.afandpa.org
AI	Asphalt Institute	www.asphaltinstitute.org
AIA	American Institute of Architects	www.aia.org
AISC	American Institute of Steel Construction	www.aisc.org
AISI	American Iron and Steel Institute	www.steel.org
AITC	American Institute of Timber Construction	www.aitc-glulam.org
AMCA	Air Movement and Control Association	www.amca.org
ANSI	American National Standards Institute	www.ansi.org
APA	Engineered Wood Association	www.apawood.org

API	American Petroleum Institute	www.api.org
ARI	Air-Conditioning and Refrigeration Institute	www.ari.org
ASHRAE	American Society of Heating, Refrigerating	www.ashrae.org
ASME	American Society of Mechanical Engineers	www.asme.org
ASTM	American Society for Testing and Materials	www.astm.org
AWI	Architectural Woodwork Institute	www.awinet.org
AWPA	American Wood Preservers Association	www.awpa.com
AWS	American Welding Society	www.aws.org
AWWA	American Water Works Association	www.awwa.org
BHMA	Builders Hardware Manufacturer's Association	www.buildershardware.com
BIA	Brick Industry Association	www.brickinfo.org
CDA	Copper Development Association	www.copper.org
CISCA	Ceilings and Interior Systems Construction Association	www.cisca.org
CLFMI	Chain Link Fence Manufacturers Institute	www.chainlinkinfo.org
CRI	The Carpet and Rug Institute	www.carpet-rug.com
CRSI	Concrete Reinforcing Steel Institute	www.crsi.org
CSSB	Cedar Shingle and Shake Bureau	www.cedarbureau.org
DHI	Door and Hardware Institute	www.dhi.org
EJMA	Expansion Joint Manufacturers Association	www.ejma.org
FMG	FM Global	www.allendale.com
GA	Gypsum Association	www.gypsum.org
GANA	Glass Association of North America www.glasswebsite.com	
ICC	International Code Council	http://www.iccsafe.org/

IEEE	Institute of Electrical and Electronics Engineers	www.ieee.org
IGMA	Insulating Glass Manufacturers Alliance	www.igmaonline.org
MBMA	Metal Building Manufacturer's Association	www.mbma.com
MIL	Military Specification	http://dodssp.daps.dla.mil/
ML/SFA	Metal Lath/Steel Framing Association	www.naamm.org
NAAMM	National Association of Architectural	www.naamm.org
NCMA	National Concrete Masonry Association	www.ncma.org
NEBB	National Environmental Balancing Bureau	www.nebb.org
NEMA	National Electrical Manufacturers Association	www.nema.org
NFPA	National Fire Protection Association	www.nfpa.org
NRCA	National Roofing Contractors Association	www.nrca.net
NTMA	National Terrazzo and Mosaic Association	www.ntma.com
PCA	Portland Cement Association	www.cement.org
PCI	Precast/Prestressed Concrete Institute	www.pci.org
PDCA	Painting and Decorating Contractors of America	www.pdca.com
PS	Product Standard U. S. Department of Commerce http://ts.nist.gov/Standards/Conformity/sccg.cfm	
RIS	Redwood Inspection Service	www.redwoodinspection.com
RFCI	Resilient Floor Covering Institute	www.rfci.com
SDI	Steel Deck Institute	www.sdi.org
SDI	Steel Door Institute	www.steeldoor.org
SIGMA	Sealed Insulating Glass Manufacturers Association	Refer to IGMA
SJI	Steel Joist Institute www.steeljoist.org	
SMACNA	Sheet Metal and Air Conditioning	www.smacna.org
SSPC	The Society for Protective Coatings	www.sspc.org

TCA	Tile Council of America, Inc.	www.tileusa.com
UL	Underwriters' Laboratories, Inc.	www.ul.com
WCLIB	West Coast Lumber Inspection Bureau	www.wclib.org
WDMA	Window and Door Manufacturing Association	www.wdma.com
WWPA	Western Wood Products Association	www.wwpa.org

END OF SECTION

SECTION 01 45 00
QUALITY CONTROL

PART 1 GENERAL

1.1 TESTING LABORATORY SERVICES

A. Special Inspections and Testing: Owner will employ and pay for the services of an independent testing agency to perform Special Inspections and Testing called for in the Contract Documents and as required by Code or authorities having jurisdiction.

B. Quality Control Testing and Inspections: Contractor shall retain an independent testing laboratory, acceptable to Architect and Owner, to perform quality control testing Work called for in the Contract Documents and pay cost of services.

C. Contractor shall cooperate with Testing Laboratory personnel and provide access to the Work as required to perform testing or inspections called for in the Construction Documents.

D. Contractor shall furnish samples for such tests and deliver them to the Testing Laboratory in quantities as required by the Contract Documents.

E. Contractor shall provide Testing Laboratory 24 hours minimum notice in advance of Work being performed that requires testing and/or inspection services.

F. The Testing Laboratory(s) shall, within 24 hours of performing a test or inspection, distribute digital copies of reports as follows:
   1. Architect
   2. Structural Engineer or other Engineering Consultant
   3. Contractor
   4. Owner
   5. Code authorities or authorities having jurisdiction as they may require.

G. All costs for additional inspections and/or retesting required when initial testing indicates Work does not comply with Contract Documents shall be paid for by the Contractor.

H. Refer to individual specification Sections and General Notes on Drawings for specific requirements for Testing and/or Inspections. The following lists are intended as a guide to the Contractor to aid in determining testing requirements for the Project, however, the requirements specified in the Technical Sections shall take precedence over these lists and these lists are not to be interpreted as being complete.
   1. Special Inspections and Testing:
      a. Special Inspections and Testing required by the General Structural Notes on the Drawings.
      b. 03 30 00 - Cast-In-Place Concrete: Test cylinders, slump test(s)
      c. 05 12 00 - Structural Steel Framing: Welded connection tests, inspection of high strength bolts.
      d. 07 24 00 - Exterior Insulation and Finish System: Installation
      e. 31 01 00 - Earthwork: Test imported fill materials if required, observation of earthwork by Geotechnical Engineer, density and moisture testing of trench backfill, field density tests of underslab fill and backfill.
      f. 31 31 00 – Soil Treatment: Field test termite treatment.
      g. Quality Control Testing and Inspections:
      h. 03 30 00 - Cast-In-Place Concrete: Floor flatness, calcium chloride moisture testing.
      i. 05 41 00 – Structural Metal Stud Framing: Steel framing properties, when required.
      j. 07 54 00 – Single-Ply TPO Membrane Roofing: Water test.
      k. 07 92 00 – Joint Sealers: Field adhesion testing and stain testing.
      l. Division 9 Flooring Sections: Moisture content of concrete sub-floors.
      m. 31 31 00 – Soil Treatment: Field test termite treatment.

n. 32 12 16 - Asphaltic Concrete Paving: Smoothness tests

1.2 CONTRACTOR'S QUALITY CONTROL

A. Where Contract Documents require that a particular product be installed and/or applied by an applicator approved by the Manufacturer, it is the Contractor's responsibility to ensure that the subcontractor employed for such work is approved in writing by the Manufacturer of the product. Such subcontractor(s) shall provide evidence of being approved to the Owner and Architect prior to being awarded the Subcontract for the Work.

B. Work shall be executed by persons skilled in the work required and shall conform to the highest methods, standards and accepted practices of the Trade or Trades involved.

END OF SECTION

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS

A. The Owner will provide the services of an independent testing laboratory to perform specified testing for passing tests. The Contractor shall call and cooperate with the laboratory to facilitate the execution of its required services. The Contractor shall also include an allowance to cover all testing noted on the Contract Drawings, required in the Geotechnical Investigation noted in Section 014523, or as required by the local authority having jurisdiction.

B. Related requirements.

1. Certification of Products: The respective sections of the specifications.
2. Test, Adjust and Balance of Equipment: The respective sections of the specifications.
3. Laboratory Tests Required and Standards for Testing: The respective sections of the specifications.

C. Where tests are conducted during construction, the Contractor will be provided with two (2) copies of the test. Additional copies will be furnished to the Architect and the Owner's representative.

D. Testing laboratory inspection, sampling and testing will be conducted on, but not limited to, the following:

1. Cast-in-Place Concrete - Section 033000.
2. Reinforced Unit Masonry – Section 042200.
3. Special Inspection – see Contract Drawings.

1.02 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. The laboratory is not authorized to relieve, revoke, alter or enlarge on requirements of the Contract Documents, approve or accept any portion of the work, or perform any duties of the Contractor.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. The Owner shall obtain, and the Contractor pay for, all testing that may be necessary to qualify materials for use in the work and all other testing required herein. This shall include material quality test mix designs, equipment and plant calibration, sieve analysis, atterberg limits, swell potential, optimum moisture, and other similar tests, required to qualify materials for compliance with the specifications or provide standards for field control tests and all other testing required herein. The Contractor shall submit test results to the Owner and the Architect sufficiently in advance of the work so that approval to proceed is received by the Contractor prior to using the material in the work.

B. Samples of material required for testing shall be furnished by the Contractor.

C. The Contractor is responsible for coordinating with the Inspector and requesting all testing, including field-testing paid for by the Owner.

D. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

E. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes, which require control by the testing laboratory.

F. Furnish copies of products' test reports as required.

G. Furnish incidental labor and facilities.

1. To provide access to the work to be tested.
2. To obtain and handle samples at the project site or at the source of the product to be tested, as directed by laboratory personnel.
3. To facilitate inspections and tests.

4. For storage and curing of testing samples.

H. The Contractor shall notify the laboratory and Owner representative sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

PART 2 - PRODUCT – Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 GENERAL

A. Comply with codes and regulations regarding potable drinking water, sanitation, dust control, fire protection, and other temporary controls.

B. Remove temporary office facilities, including construction trailers used for field offices, storage sheds, portable toilet facilities, fences and gates, trash dumpsters, etc. and other construction of temporary nature from the site as soon as, in the opinion of the Architect, the progress of the work will permit. Recondition and restore to a condition acceptable to the Architect, areas of the site occupied by temporary facilities.

C. Obtain written approval from the Owner a minimum of 72 hours prior to disconnection or shutting off service or utility.

1.2 TEMPORARY ELECTRICITY

A. Provide and pay for power service required from Utility and make arrangements for such service.

B. Provide temporary electric feeder from electrical service at location as directed by the Utility Owner or as indicated on Drawings.

C. Provide adequate distribution equipment including main service disconnect(s), overcurrent protection, branch circuits, wiring and distribution boxes with power outlets as necessary for construction operations. Provide flexible, heavy-duty exterior rated power cords as necessary. Provide separate branch circuits and wiring for temporary lighting.

D. Properly installed permanent convenience receptacles may be utilized during construction after appropriate approvals and permits for temporary use. Do not exceed AMP ratings of breaker serving outlets. Electrical receptacle used during construction shall be left in a new condition without damage at final completion.

1.3 TEMPORARY LIGHTING

A. Provide lighting for construction operations to achieve a minimum lighting level of 2 watts/sq. ft.

B. Provide adequate floodlights, clusters and spot illumination to work areas after dark.

C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

D. Maintain lighting and provide routine repairs.

E. Replace all lamps used during the construction period immediately prior to issuance of Certificate of Substantial Completion.

1.4 TEMPORARY HEATING/COOLING AND VENTILATING

A. Provide and pay for heating/cooling devices and heat as required to maintain appropriate and specified conditions for construction operations. Exercise measures to conserve energy.

B. Prior to operation of permanent equipment for temporary heating or cooling purposes, verify that installation is approved for operation, equipment is lubricated, and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1. All ducts shall be vacuumed, and all filters shall be replaced immediately prior to issuance of Certificate of Substantial Completion.

C. Maintain minimum/maximum ambient temperature and humidity conditions required by individual specification sections for installation of materials and finishes required to have specific environmental conditions.

D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.5 COMMUNICATIONS

A. At time of Project mobilization, or before, provide Architect and Owner with Project team directory, including the following:
   1. General Contractor's home office.
   2. Contractor's superintendent mobile telephone number.
   3. Other major subcontractors and Project Team members.
B. Provide superintendent with mobile telephone throughout construction period.
C. Computer and Internet Access: Provide computer with internet access in field office.
   1. Provide DSL or Cable modem access with 1.5 Mbps minimum.
   2. Computer shall be made available to Owner and Architect for use throughout construction.
   3. Provide account/address reserved for project use.

1.6 TEMPORARY WATER SERVICE

A. Provide, maintain, and pay for suitable quality water service required for construction operations.
   1. Provide suitable facilities with drainage to sanitary sewer.
   2. Provide backflow prevention, branch piping and water distribution throughout the site with threaded connections for attachment of hoses.
B. Construction debris, mortars, drywall mud, adhesives, paint, or similar items shall not be washed down drains.

1.7 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures.

1.8 TEMPORARY FIRE PROTECTION

A. Provide adequate number of fire extinguishers to protect the Work.
B. Comply with fire insurance and governing regulations.
C. Provide UL labeled ABC all-purpose fire extinguishers adequate in size and number.
D. Provide temporary office and storage areas with fire extinguishers.

1.9 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
B. Provide barricades and covered walkways as may be required by governing authorities to protect public rights-of-way and public access.
C. Provide protection for plant life designated to remain. Replace damaged plant life.
D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.10 FENCING

A. Construction: Commercial grade chain link fence with adequate support to remain in place during storm winds.
B. Provide 6'-0" high fence around construction site, including parking lots, contractor staging areas, landscape areas, retention areas, etc. as necessary to protect Work; equip with vehicular and pedestrian gates with locks.
C. Locate gates for access to work areas, as required. Close and lock after working hours.

1.11 ENVIRONMENT PROTECTION AND CONTROLS

A. Exercise controls to keep noise and dust during construction to a minimum. Traffic or construction areas shall be sprinkled with water or chemicals as required and in accordance with applicable regulatory requirements.
B. Environmental Protection: Conduct construction operations and operate equipment and machinery using methods complying with environmental regulations to avoid or minimize environmental pollution or contamination.
   1. Air Resources: Prevent creation of dust, air pollution, and odors.
   2. Store volatile liquids, including fuels and solvents, in closed containers.
   3. Properly maintain equipment to reduce gaseous pollutant emissions.
   4. Properly dispose of hazardous or contaminated debris in compliance with

environmental regulations.

5. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment as may be necessary to properly dispose of ground water and storm water.
6. Protect site from puddling or running water. Provide water barriers as required to protect sites from soil erosion.
7. Comply with local requirements for storm water pollution prevention.

1.12 EXTERIOR ENCLOSURES

A. Provide temporary weather-tight closure of any exterior openings or penetrations required for Work or as necessary to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification Sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.13 PROTECTION OF INSTALLED WORK

A. Protect all installed work as follows. Additionally, provide the special protection features specified in individual specification Sections.
B. Provide temporary and removable protection for installed products. Control activity in immediate work area to avoid damage.
C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with plywood sheets and waterproof covering.
E. Prohibit traffic or storage directly on waterproofed or roofed surfaces. If traffic or activity is necessary, provide protection in accordance with material and or system manufacturer's printed instructions.
F. Prohibit traffic from landscaped areas.

1.14 SECURITY

A. Provide security and facilities to protect Work and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
B. Provide and pay for security services if necessary for adequate protection.

1.15 SITE ACCESS AND ACCESS ROADS

A. Restrict site access to contracted construction personnel and Project Team Members only.
B. Comply with Contractor Use of Site requirements of Section 01 11 00 – Summary of Work.
C. Construct and maintain temporary roads accessing public thoroughfares to serve the construction area.
D. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
E. Provide and maintain access to fire hydrants, free of obstructions.
F. Provide means of removing mud from vehicle wheels before entering streets.

1.16 PARKING AND STAGING AREAS

A. Provide temporary surface parking areas to accommodate construction personnel. Parking areas shall be graded and surfaced with suitable well-draining, non-dusting granular material.
B. Provide and maintain access to fire hydrants, free of obstructions.
C. Provide means of removing mud from vehicle wheels before entering streets.
D. Provide fenced are with secure locking gates for exterior construction staging that may be necessary throughout the construction period.

1.17 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition on a daily basis.
B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
D. Regularly remove waste materials, debris, and rubbish from site and dispose off-site. Do not allow to accumulate.

1.18 PROJECT IDENTIFICATION

A. General Contractor is limited to one (1) sign located on their construction trailer. Additional signage must be approved by the Owner's Representative. Subcontractors, suppliers, manufacturers, consultants, etc., shall not furnish company information banners unless approved by Owner's Representative.
B. Project Information Sign: Provide two (2) 16 sq. ft. project signs of exterior grade vinyl to be affixed to project construction fence, printed to Architect's design and colors.
    1. List title of Project, Names of Owner, Architect, and General Contractor.
    2. Erect on site at location established by Architect and Owner.
    3. Allow 7 working days for Architect to provide electronic graphic image.
C. Contractor shall obtain all required City/County approvals and sign permits and pay all fees required for installation of temporary construction signs.
D. No other signs are allowed without Owner's permission except those required by law.

1.19 FIELD OFFICES AND SHEDS

A. Temporary Field Offices (Construction Trailers): Weather-tight, with lighting, electrical outlets, heating, cooling, and ventilating equipment, and equipped with sturdy furniture, drawing rack(s), drawing display table(s), chairs.
B. Provide space for project meetings, with table and chairs to accommodate the entire Project Team.
C. Where required by the Architect, provide separate private office, similarly equipped and furnished, for use of Architect.
D. Locate offices (construction trailers) and sheds as approved by Owner.

END OF SECTION

SECTION 01 57 00
TEMPORARY WATER POLLUTION, EROSION,
AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor is responsible for providing temporary water pollution, erosion, and sedimentation control work. This temporary work is intended to provide prevention, control, and abatement of water pollution, erosion, and sedimentation within the limits of the Project, and to minimize damage to the Work, adjacent property, streams, and other bodies of water.

B. Controlling and preventing pollution, erosion, run-off, sedimentation, and related damage may require the Contractor to perform temporary work items including, but not limited to, the following:

1. Stabilization of construction entrances.
2. Installation of silt fences along the downstream end of the project to trap sediment that may cross the site.
3. Installation of temporary sediment traps for the retention basins.
4. Dust control of the entire site.
5. Solid waste management, spill contamination plan, designated wash out areas, material storage area, and equipment maintenance procedures.

C. Temporary erosion, sedimentation, and water pollution control shall be the Contractor's responsibility. Costs for temporary erosion, sedimentation, and water pollution control work will be considered incidental to the Work and such costs shall be included in the base bid.

1.02 DEFINITIONS

A. Designated Washout Area: A temporary pit or bermed area for washout of concrete trucks, tools, mortar mixers, etc.

B. Dust Control: A comprehensive plan to limit off-site sedimentation by controlling the sites potential for producing air borne fugitive dust and track-out of sediments.

C. Equipment Maintenance Procedures: Establish a program of equipment maintenance procedures which will reduce the contamination of on-site soils.

D. Protected Chemical and Materials Storage Area: Provide a covered storage area for construction materials. Create a spill proof perimeter around the storage area.

E. Silt Fence: A temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts, entrenched, and, depending upon the strength of the fabric used, with wire fence for supports.

F. Solid Waste Management: The routine collection and regular disposal of accumulated solid waste generated at the construction site.

G. Spill Containment Plan: An emergency plan to contain spills of dangerous, hazardous, or toxic wastes which mitigates environmental damage and provides prompt notice to proper authorities.

H. Stabilized Construction Entrance: A stabilized pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area.

I. Temporary Sediment Trap: A small temporary ponding area, with a gravel outlet, formed by excavation and/or by constructing an earthen embankment.

1.03 REFERENCES

A. Drainage Design Manual for Maricopa County, Arizona, Volume III, Erosion Control.

PART 2 – PRODUCTS – Not Used

PART 3 - EXECUTION

3.01 GENERAL

A. Compare the Project schedule with on-site management measures to limit the exposure of the Site to erosion and sedimentation including, but not limited to:
   1. Sequence construction activities so that denuded areas are not exposed for long periods of time.
   2. Schedule landscaping and other work that permanently stabilizes the area to be done immediately after the land has been graded to its final contour.
   3. Alter the Project schedule to minimize the amount of denuded areas during inclement weather.
   4. Construct permanent stormwater control facilities early in the project schedule and then utilize them for controlling erosion and sedimentation.

B. Examine the site plan to determine appropriate methods for reducing the volume of stormwater which will run across the denuded areas of the Project site. This can be accomplished by diverting upslope water from entering unvegetated areas, release captured stormwater at a slot and controlled rate, and provide temporary and permanent vegetative controls to buffer and disperse runoff.

C. Separate sediment from the stormwater before leaving the Project site through the use of temporary sediment traps and silt fences.

D. Prevent non-sediment stormwater pollution by construction materials, equipment, and wastes through proper housekeeping practices.

3.02 IMPLEMENTATION

A. The Contractor shall provide a temporary water pollution, erosion, and sedimentation control plan for approval by the Owner prior to the commencement of construction operations. The plan shall show the scheduling, as it relates to the Contractor's construction schedule, for permanent pollution, sedimentation, and erosion control work and for temporary erosion, pollution, and sedimentation prevention control measures the Contractor proposes to take due to the Work.

B. The Contractor shall not perform clearing, grubbing, or any other earthwork on the Project until the plan has been approved.

C. The Owner will not be liable to the Contractor for failure to approve all or any portion of the plan, or necessary revisions, nor for any delays to the Work due to the Contractor's failure to submit an acceptable plan.

D. A copy of the approved temporary water pollution, erosion, and sedimentation control plan shall be maintained on the Project site for the duration of construction.

3.03 CONSTRUCTION

A. Provide applicable temporary water pollution, erosion, and sedimentation prevention practices in accordance with Drainage Design Manual for Mohave County, Arizona, Erosion Control.

B. The Contractor shall coordinate temporary water pollution, erosion, and sedimentation control work with the permanent drainage, sedimentation, and erosion control work that may be specified in the Contract Documents to ensure continuous water pollution, erosion, and sedimentation control is maintained during the performance of the Work.

C. If the Owner orders the Work suspended for an extended time, the Contractor shall make every effort to control erosion, pollution, sedimentation, and runoff during shutdown.

D. The extent of excavation, borrow, and embankment operations in progress will be limited commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other permanent pollution, erosion, and sedimentation control measures current according to the accepted construction schedule. If the Owner determines that water pollution, erosion, or sedimentation could occur due to seasonal limitations, the nature of the material, or the

Contractor's progress, temporary water pollution, erosion, and sedimentation control measures shall be taken immediately.

End of Section

SECTION 01 60 00
MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 DELIVERY, STORAGE AND HANDLING

A. Deliver manufactured materials in original packages, containers, or bundles, with the seals unbroken, identified by the name and mark of the Manufacturer, the product name, color, number, and so forth.

B. Deliver fabrications in as large assemblies as practicable. Fabrications specified to be shop-primed or shop-finished shall be packaged or crated as required to preserve such priming or finish intact and free from damage.

C. The Contractor shall be responsible for protecting all materials and equipment furnished under the Contract including materials and equipment furnished by the Owner for the Contractor to install and for the materials and equipment furnished and installed by the Owner's separate contractors in the completed or partially completed Work.

D. Store materials in a manner to properly protect them from damage. Materials or equipment damaged by handling, weather, dirt, or other causes will not be acceptable and are to be removed from the site. Replace such materials immediately so as not to delay the Work.

E. Store materials so as to cause no obstructions. Store off sidewalks, roadways, and underground services.

F. When a room in the Project is used as a shop or store room, the Contractor shall be responsible for all repairs, patching or cleaning necessary due to such use. Location of such storage space shall be subject to approval of the Architect.

1.2 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Whenever a product is specified by using a proprietary name or the name of a particular Manufacturer or Vendor, the specific item mentioned shall be understood as establishing type, function, dimension, appearance, and quality desired.

B. Other manufacturers' products will be accepted provided sufficient information is submitted to allow the Architect to determine that products proposed are equivalent to those named.

C. Prior Approvals:

1. Substitutions will be considered when written request has been submitted to the Architect for approval.
2. Contractor shall request approval of such substitution, in writing, to the Architect using Document 00 43 25 – Substitution Request (During the Bidding Phase) form contained in the Project Manual.
3. Each such request shall include all information requested below for Requests for approval after award of a Contract. If the Owner approves any proposed substitution, such approval shall be set forth in an Addendum.

D. Requests for approval after award of a Contract:

1. Requests shall be made only under one of the following conditions:
   a. Specified product or material is not available.
   b. Extensive revisions to the Contract Documents are not required.
   c. Proposed changes are consistent with intent of the Contract Documents.
   d. Request is timely and properly submitted.
   e. Specified product or material cannot be provided within the Contract Time.
   f. Request relates to an “or equal” clause.
   g. Proposed substitution offers Owner a substantial advantage in cost, time, or other considerations.
   h. Specified product or material cannot receive regulatory approval.

i. Specified product or material is incompatible with other materials.
j. Specified product or material cannot be coordinated with other materials.
k. Specified product or material manufacturer cannot provide the specified warranty.

2. Requests shall be submitted to the Architect a minimum of 10 working days prior to date Contractor is required to place an order for the product.
3. Contractor shall request approval of such substitution, in writing, to the Architect using Section 00 63 25 – Substitution Request (After the Bidding Phase) form contained in the Project Manual.
4. The request shall specifically state the reason that the product is unavailable with evidence to substantiate the reason.
5. Requests made directly to Architect by suppliers, subcontractors and distributors that are not from the Contractor will not be accepted by the Architect or Owner.
6. Architect will approve or reject substitution in writing.
7. Substitutions will not be considered if they are indicated or implied on Shop Drawings.

E. Contractor shall submit descriptive brochures, drawings, samples and other data as is necessary to provide direct comparison to the specified materials after reviewing and determining that product meets specified requirements. Submittals shall be well marked and identified as to the types and kind of items being submitted for approval. Lack of sufficient information will be cause for rejection. Reference to catalogs will not be acceptable unless the catalog is submitted with approval request and the specific product or material, and its components are clearly identified.

F. In submitting a substitution, the Contractor makes the following representations:
1. Proposed substitution has been fully investigated and determined to be equal or superior to the specified product or material.
2. The same warranty will be furnished for the proposed substitution as for specified product or material.
3. The same maintenance service and source of replacement parts, as applicable, is available.
4. Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
5. Cost data included on the substitution request is complete. Claims for additional costs related to accepted substitution and its impact on other portions of the Work which may subsequently become apparent are waived.
6. Proposed substitution does not affect dimensions and functional clearances.
7. Payment for costs for additional services of Architect caused by the substitution shall be paid by Contractor. The Contractor will be billed for additional services at the current hourly rate charged by the Architect. The Architect will charge the Owner, and such costs will be deducted from monies still due the Contractor.
8. Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

END OF SECTION

SECTION 01 73 00
EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 EXAMINATION AND COORDINATION OF WORK

A. Verification of Conditions: Examine and verify surfaces, sub surfaces, condition, and serviceability of previous work to receive subsequent work and report detrimental conditions in writing to the Architect.

B. Commencement of work acknowledges acceptance and serviceability of previous work.

C. Coordination: Coordinate with other work which affects, connects with, or will be concealed by subsequent work.

1. Work within concealed ceiling and plenum spaces shall be coordinated with all other work within these spaces to assure a coordinated assembly.
2. Coordinate location and layout of mechanical, electrical and other systems located within suspended ceilings.
3. Notify Architect immediately if conflicts are found.
4. Adjust work in place in concealed ceiling spaces as required to allow installation of other work which cannot be adjusted.

D. Any remedial work required to be performed on previously placed work after new work has commenced shall be by and at the expense of the Contractor and/or sub-contractor having commenced the new work.

1.2 TOLERANCES

A. Certain tolerances are listed in the various specification sections and on the Drawings. In addition, other tolerance limits are set forth below. These tolerances are the maximum variation allowed on the Project.

B. Each of the Contractors shall review the tolerance limits established for their work as they relate to the other work on the Project. Should the tolerance limits established for their work be in conflict with those limits established for other adjoining work, the Architect and Owner shall be notified before proceeding.

C. It is the intention of the Contract Documents that, assuming work in place is within the tolerance limits established or has been accepted by following contractor(s), subsequent work shall be adjusted as required.

D. Tolerances:

1. Concrete: 1/8 inch plus or minus in any 10 feet and 3/4-inch total overall in any direction.
2. Masonry: 1/8 inch plus or minus in any 10 feet and 1/4-inch total overall in any direction.
3. Structural Steel: 1/8 inch plus or minus in 60 feet and 1/2-inch total overall in any direction.
4. Miscellaneous Metal: 1/8 inch plus or minus in 20 feet and 1/4-inch total overall in any direction.
5. Ornamental Metal: 1/8-inch total overall in any direction.
6. Drywall: 1/16 inch plus or minus in any 12 feet and 1/8-inch total overall in any direction.
7. Acoustic Tile: 1/8-inch maximum variation overall in any direction.
8. Granite and Marble: 1/16-inch maximum variation overall in any direction.
9. Millwork: 1/16 inch Maximum overall in any direction.
10. Ceramic Tile: 1/16 inch maximum overall in any direction.

E. All materials such as Stone tile and veneers, acoustic tile, lay-in acoustical panel and decorative ceilings, ceramic tile, VCT, wood flooring, and so forth, are to meet flush with adjacent pieces of the same material.

1.3 APPROVED APPLICATORS

A. Where specific instructions in the Specifications require that a particular product and/or material be applied and/or installed by an "approved applicator" it shall be the Contractor's responsibility to ensure that any subcontractor or sub-subcontractor used for such Work is in fact currently certified by the particular Manufacturer for this type of installation or application.

1.4 APPROVED MANUFACTURERS

A. Each Section includes a list of Manufacturers whose equipment is acceptable to manufacture, subject to conformance with the Contract Documents. Careful checking must be completed by the Contractor and the manufacturer or equipment supplier to verify that the equipment will meet all capacities, requirements, space allocations and is suitable for the intended purpose specified.

1.5 REFERENCE DATA

A. Reference data made available to the Contractor is for the Contractor's information only, and neither the Owner nor the Architect assumes any responsibility for the Contractor's conclusions.

B. The Contractor shall establish and maintain all building and construction grades, lines, levels, and benchmarks. This Work shall be performed by a licensed Civil Engineer or Surveyor under the employ of the Contractor, who shall certify to the Owner that he has performed this service.

C. The Contractor shall not remove any fixed property line markers, monuments, or data.

END OF SECTION

SECTION 01 73 29
CUTTING AND PATCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cutting, fitting and patching, including attendant excavation and backfill required to complete Work, and for:
   1. Making several parts fit together properly.
   2. Uncovering portions of Work to provide for installation of ill-timed Work.
   3. Removing and replacing defective and non-conforming Work.
   4. Removing samples of installed Work required for testing, as directed by Architect.
   5. Providing routine penetrations of non-structural surfaces for installation of piping electrical conduit, and similar items.

1.2 SUBMITTALS

A. In advance of executing any cutting or alterations, submit written request to Architect requesting consent to proceed with cutting which affects:
   1. Work of Owner or other trades.
   2. Structural value or integrity of any element of Project.
   3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
   4. Efficiency, operational life, maintenance, or safety of operational elements.
   5. Visual qualities of sight-exposed elements.

B. Include in request:
   1. Identification of Project.
   2. Description of affected Work.
   3. Necessity for cutting, alteration or excavation.
   4. Effect of Work of Owner or other trades, or structural or weatherproof integrity of Project.
   5. Description of proposed Work:
      a. Scope of cutting, patching, alteration, or excavation.
      b. Trades which will execute Work.
      c. Products proposed to be used.
      d. Extent of refinishing to be done.
   6. Alternatives to cutting and patching.
   7. Cost proposal, when applicable.
   8. Written permission of trades whose Work will be affected.

C. Submit written notice to Architect designating time work will be uncovered and when work will be performed to provide for observation when necessary.

PAYMENT FOR COSTS

D. Payment for cutting and patching caused by ill-timed or defective work or work not conforming to Contract Documents, including costs for additional services of Architect and Engineer shall be paid by Contractor. The Contractor will be billed for additional services at the current hourly rate charged by the Architect. The Architect will charge the Owner, and such costs will be deducted from monies still due the Contractor.

E. Payment for work done on written instructions of Architect, other than defective or nonconforming work, will be paid by Owner on approval of a written Change Order. Provide written cost proposal prior to proceeding with cutting and patching instructed by Architect for other than defective or nonconforming work. All work shall be approved by Architect and Owner prior to commencement.

PART 2 PRODUCTS

2.1 MATERIALS

A. Provide for replacement of Work removed. Comply with Contract Documents for type of Work standards and Specification requirements for each specific product involved.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect existing conditions of Work, including elements subject to movement or damage during cutting and patching, and excavating and backfilling. After uncovering Work, inspect conditions affecting installation of new products and verify procedures with Architect.

B. Report unsatisfactory or questionable conditions in writing to Architect/Engineer. Do not proceed with Work until further instructions are received.

3.2 PREPARATION

A. Provide shoring, bracing and support as necessary to maintain structural integrity of work. Design of shoring, bracing and supports is the responsibility of the Contractor and shall be performed by an Engineer registered in the State of Arizona.

B. Provide devices and methods to protect other portions of Work from damage, including elements which may be exposed by cutting and patching Work. Maintain excavations free from water.

3.3 ERECTION, INSTALLATION AND APPLICATION

A. Performance:

1. Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
2. Execute cutting and demolition by methods which prevent damage to other Work to provide proper surfaces to receive installation of repairs and new Work.
3. Execute excavating and backfilling by methods which prevent damage to other Work and settlement as specified in Section 31 01 00 - Earthwork.

B. Employ original installer or fabricator to perform cutting and patching for:

1. Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants and waterproofing.
2. Sight-exposed finished surfaces.

C. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes as shown on Drawings and as specified.

D. Fit Work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces. Conform to fire code requirements for penetrations and maintain integrity of fire walls and ceilings.

E. Restore Work which has been cut or removed. Install new products to provide completed Work in accordance with requirements of Contract Documents and as required to match surrounding areas and surfaces.

F. Refinish entire surfaces as necessary to provide an even, matching finish as follows:

1. Painted Walls or Ceilings: To nearest intersection with another finish or corner.
2. Where applied finishes occur (i.e wallcovering, tile, wood paneling): To nearest intersection of finish without damage to adjacent material. Where match of pattern, grain, texture, or similar finish cannot be made, refinish area to intersection with other finish or internal corner.
3. Manufactured or shop fabricated materials: Replace entire affected surface or entire component.

END OF SECTION

SECTION 01 74 00
CLEANING

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Execute cleaning during progress of the work and at completion of the Work as required by the General Conditions. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

B. Products must contain, if possible, only ingredients derived from renewable or regrowable resources.

C. Products must be free of compounds which are carcinogenic, mutagenic, and teratogenic, or which are toxic to human beings at the concentrations used in cleaning.

D. Products must demonstrate exceptionally low volatility and not contribute to the contamination of the indoor environment and must demonstrate compatibility with building occupants as more particularly defined under Environmental Choice Certification Criteria PRC-097.

E. Cleaning products used for routine cleaning must be certified or otherwise meet the criteria under Environmental Choice Certification Criteria PRC-097, “Cleaning Products with Low Potential for Environmental Illness and Endocrine Disruption.”

1. Cleaners must meet or exceed government and industry safety and performance standards.
2. Cleaners must meet the requirements of all applicable government acts, bylaws, and regulations, including the Environmental Protection Act.
3. Cleaners must not require poison labeling under the Hazardous Products Act.
4. Cleaners must not be formulated with phosphates, NTA, EDTA, APEO’s, or ingredients which are bioaccumulating or potentially bioaccumulating.
5. Cleaners must not contain halogenated organic solvents or butoxy-ethanol.
6. Cleaners must not use ethylene oxide in the manufacture of the whole formula or any component.
7. Cleaners must not contain volatile organic compounds (VOCs) exceeding 0.05% by weight.
8. Cleaners must be nontoxic to aquatic life by whole formulation short-term sensitive toxicity tests.
9. Cleaners must demonstrate minimum potential for introduction of endocrine disrupting by-products into the receiving environment, through complete absence of detectable recalcitrant metabolites formed during biodegradation tests.
10. Cleaners must demonstrate low potential for skin irritancy.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property, and which will not damage surfaces. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

B. Comply with GS-42, Green Seal Environmental Standard for Cleaning Services, for general purpose, bathroom, glass, and carpet cleaners used for industrial and institutional purposes.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION

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

B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

C. Provide on-site containers for collection of waste materials, debris, and rubbish per Section 017419.

D. Remove waste materials debris and rubbish from the site periodically and legally dispose of it at dumping areas off Owner's property.

E. Clean up spills, remove accumulated water, and provide temporary protection to keep work areas dry.

3.02 DUST CONTROL

A. Clean interior spaces when ready to receive finished painting and continue cleaning on as-needed basis until building is ready for Substantial Completion or occupancy.

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

3.03 FINAL CLEANING

A. Prior to Substantial Completion of the work, remove all surplus material, false-work, temporary structures, plants and debris of any kind. If final clean-up is carried out too early and the work becomes dirty due to subsequent operations under this Contract, the work shall be re-cleaned as required.

B. Employ experienced workmen, or professional cleaners, for final cleaning.

C. Comply with GS-42 cleaning procedure requirements.

D. In preparation for Substantial Completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces and of concealed spaces.

1. Metal: Remove protective coverings and other foreign matter from integrally or factory finished metals. Use care not to scratch the finish. Wash, rinse, and dry interior surfaces.
2. Floors: Remove temporary floor protection. Remove stains, spotting, and soiling. Vacuum all carpeted areas, dust, and damp mop all hard surface floors and clean in accordance with material or manufacturer's directions.
3. Other Surfaces: Remove marks, stains, dust, and other soiling from painted, decorated or stained work. Clean and polish hardware and laminated plastic. Remove dirt and dust from other fixtures and equipment.

E. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight-exposed interior and exterior finished surfaces; polish surfaces so designated to shine finish.

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

G. Broom clean paved surfaces; rake clean other surfaces of grounds.

H. Replace air conditioning filters if units are operated during construction.

I. Clean ducts, blowers, and coils if air conditioning units were operated without filters during construction.

J. Owner will assume responsibility for cleaning as of time designated on Certificate of Substantial Completion of Owner's acceptance of the project or portion thereof.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 FINAL CLEANING

A. Perform the following special cleaning for trades at completion of Work. Employ experienced workmen or professional cleaners for the final cleaning:

1. Remove marks, stains, fingerprints, soil and dirt from paint, stain and wall covering.
2. Remove spots, soil, paint, and mastic from tile work and wash same.
3. Clean fixtures, equipment, and piping; remove stains, paint, dirt and dust.
4. Remove temporary floor protections, clean and polish floors.
5. Clean concrete walks and slabs of plaster or cement droppings, paint and other objectionable materials to present a neat, clean appearance.
6. Clean exterior and interior metal surfaces, including doors and windows and their frames.
7. Remove oil, stains, dust, dirt, paint and the like from items required to have a polished finish; polish and leave without fingermarks or other blemishes.
8. Wash interior and exterior glazing, inside and outside.
9. Polish mirrors.

B. Make building(s) ready for occupancy in every respect. Lay heavy building paper in main circulation areas to protect the floors until final inspection and acceptance.

C. Existing improvements, inside or outside the property which are disturbed, damaged, or destroyed by the Work under the Contract shall be restored to their original condition unless as part of the Work, improvements were required.

1.2 PROJECT RECORD DOCUMENTS

A. As the work progresses, the Contractor shall maintain a complete and accurate record of changes or deviations from the Contract Documents and Submittals, indicating the Work as actually installed. Document information by daily corrections and/or additions in the appropriate locations on a record set of prints of the Construction Documents and Submittals and a copy of the Specifications which shall be maintained by the Contractor solely for the purpose of this documentation. Keep this record set of Construction Documents and Submittals at the Project site for review by the Owner and Architect.

B. Information contained in the Record Documents shall include, but not be limited to:

1. Modifications made by Addenda, Bulletins, Change Orders, Construction Change Directives and Architect's Supplemental Instructions.
2. Location of site underground pipes, conduits, ducts, cables, and similar work, dimensioned horizontally to permanent points of reference and located vertically by indicating depth of burial and invert elevations. Dimensions shall be accurate within 2 inches.
3. Location of building plumbing piping, sprinkler piping, control valves, shut-off valves, heating and air conditioning equipment, mechanical piping, ductwork, major conduit runs, power, control and alarm wiring, etc., dimensioned horizontally to permanent points of reference. Dimensions shall be accurate within 2 inches. By notation, describe the vertical location of the item such as "below slab," "above ceiling," etc.
4. Modifications made to accommodate field conditions.
5. Location and function of mechanical and electrical control devices and shut-off valves.
6. Panel schedules showing final circuiting of electrical fixtures and equipment.

B. The Architect will provide the Contractor with a black-line bond paper set of drawings, of the complete original bidding documents, at Contractor's expense. Seals and

signatures of Registrants shall be completely removed and/or permanently obscured. Contractor shall provide the following on the Drawings:

1. Changes in the Contract Documents, secured with prior approval of the Architect, recorded in a neat readable manner, in black ink, by a competent drafter. Deletions shall be made by erasure or other indication clearly indicating information deleted. Record information in adequate size lettering and notations to be legible at half size reproduction.
2. Prior to application for final payment, transfer all changes, information and notations made to the record prints to the reproducible set.

C. Upon Substantial Completion of the Work, deliver the complete set of Record Documents including prints, black-line bond paper set, Shop Drawings, and annotated Specifications to the Architect for approval.

D. Permit Record Set, as approved by all governing agencies, shall be kept in a secure location by the Contractor.

1.3 OWNERS MANUAL

A. Owner's Manual: Prior to final payment, provide 1 electronic copy and Three (3) hard-back, loose-leaf binders, suitably typed, indexed, and labeled, containing the following:

1. Subcontractors and major suppliers list with companies' names, addresses, email addresses and telephone numbers.
2. Warranties and certifications.
3. Affidavit from general and subcontractors on use of asbestos free materials.
4. Maintenance/operation instructions.
5. Parts list.
6. List of Extra Materials delivered to Owner; signed for by Owner's representative.
7. Other items required by the Specifications.
8. Provide electronic copy on DVD, memory key or similar current electronic media in common acceptable format such as PDF.

1.4 OPERATION AND MAINTENANCE DATA

A. Submittals: Submit two (2) draft copies of Operation and Maintenance Manuals for systems and equipment, including electrical and control items, and parts lists, a minimum of 14 days prior to requesting inspection for Substantial Completion, or scheduled Substantial Completion Date, whichever is earlier. Furnish separate copies for each Division.

1. Architect will review Manuals for general scope and content and return one copy of draft manuals with required action.

B. Operating instructions shall include complete operating sequence, control diagrams, description of method of operating machinery, machine serial numbers, factory order numbers, parts, tests, instruction books, suppliers phone numbers, addresses, email addresses, and individual equipment guarantees. Parts lists shall be complete in every respect, showing parts and part numbers for ready reference.

C. Maintenance instructions shall include a written list of required and suggested maintenance for mechanical, plumbing, electrical or other equipment or features in the project. Each item shall contain a brief description of the maintenance required as well as the recommended time frame or period for the maintenance. Include lists of filter sizes for air handling equipment, indicated "washable" or "disposable" and for which unit the filter is for.

D. Provide operating and maintenance instructions on DVD, memory key or similar current electronic media in common acceptable format such as PDF, either prepared by the Contractor or where available, manufacturers prepared operations and maintenance videos and/or instructions for each specific equipment item or system.

E. Assemble maintenance manual and operating instructions in hard back loose leaf binders. Suitably label and index material for ready reference.

F. Upon substantial completion of the Project Work, submit one copy of the Operation and Maintenance Manual and Parts Lists to the Architect for approval. Upon receipt of

Notice of Approval, deliver the additional copy to the Owner. Include DVD, memory key or similar current electronic media copies of materials in electronic format.

1.5 SPARE PARTS AND MAINTENANCE MATERIALS

A. Deliver spare parts, tools, extra stocks of material and similar physical items required by individual specification sections to the Owner with a copy of the transmittal to the Architect. Obtain signed receipts from the Owner for all items.

B. Change over construction locks to permanent keying system. Deliver the required number of keys to the Owner with a copy of the transmittal to the Architect. Obtain receipts from the Owner for delivered items.

1.6 ELECTRONIC COPIES OF IMAGE DOCUMENTS

A. Upon completion, provide CD, DVD, memory key or other current electronic media containing image copies in JPEG, PDF or other common appropriate electronic format of all record and maintenance documents.

1.7 WARRANTIES

A. Submit warranties required by individual specification Sections in duplicate, assembled in durable binders with a Table of Contents and a digital copy of same on DVD, memory key or other current electronic media.

B. The date of commencement of warranties shall be the date of Substantial Completion except as may be modified by AIA Document G-704, Certificate of Substantial Completion, or by other written agreement with the Owner.

1.8 BONDS AND GUARANTEES

A. At the issuance of the final certificate and submission of items for completion in accordance with the General Conditions, the Contractor will deliver to the Owner all required bonds and guarantees (2 copies minimum).

1.9 SUBSTANTIAL COMPLETION

A. With the submission of the Certificate of Substantial Completion, the Contractor shall execute the following additional forms:

1. Contractor's Affidavit of Payment of Debts and Claims - AIA G706.
2. Consent of Surety Company to Final Payment - AIA G707.
3. Contractor's Affidavit of Release of Liens - AIA G706A.
4. Release of Liens from each Subcontractor.

1.10 CERTIFICATES OF INSPECTION AND CERTIFICATE OF OCCUPANCY

A. The Contractor shall obtain required inspections and certificates of occupancy, and deliver evidence of compliance by governing bodies, prior to issuance of Substantial Completion.

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor and equipment for demolition work as indicated on the Contract Drawings, as scheduled, and as specified herein.
B. This section includes the demolition and dismantling required to complete the work.
C. This section also includes (but may not be necessarily limited to) the removal of existing site structures such as concrete slabs, pavement, etc.
D. The Contractor shall remove all materials or equipment as directed by the Owner.
E. All items of work indicated to be removed by other trades shall be coordinated with specific trade involved before proceeding with the demolition.

1.02 CONDUCT OF WORK

A. Remove all work carefully and only to the extent required for the final work. Remove all loose or damaged materials caused by demolition, or noted, or specified to be removed.
B. Conduct all operations with a minimum of noise.
C. Erect dustproof partition where demolition work is in progress and as directed. Such partitions shall remain in place until their removal as directed.
D. Carefully remove any materials and equipment noted or specified to be reused or salvaged and handle with care to minimize damage.
E. The use of pneumatic or electric hammers for demolition and cutting purposes will not be permitted without prior approval of the Owner.
F. After the demolition work in any area is completed, clean all debris before any new construction is started.
G. Properly repair any adjoining surfaces to original condition that are damaged by the Contractor or his Subcontractors.
H. All holes, depressions, etc., created as a result of demolition activities, shall be filled with engineered materials and graded to drain properly.

PART 2 – MATERIALS – Not Used

PART 3 - EXECUTION

3.01 DISPOSITION OF MATERIALS

A. Store all materials and equipment to be reused in the work on the site in the construction area.
B. Remove all other materials or debris resulting from demolition operations from the site promptly. No accumulation of debris will be permitted.
C. Do not burn wood and flammable debris resulting from demolition operations on the site.

3.02 PROTECTION

A. Take reasonable and adequate precautions to protect the Owner's property from damage during demolition work, moving of debris, restore any damage to the Owner's property due to the aforesaid work or replace in a manner satisfactory to the Architect.
B. Take care to restrain demolished materials and debris from falling down shafts, ducts or into stud cavities.
C. Provide and maintain suitable barricades, shelters, lights, and danger signals during the progress of work. They shall meet the requirements of State and/or

local building codes. Assume full responsibility of barriers to completion of contract and remove same.

D. Provide security if required to protect project area and adjoining areas.

END OF SECTION

SECTION 02 41 19
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Facilities & Temporary Controls-Section 01 50 00.

1.02 WORK INCLUDED

A. Protecting utilities, structures, sidewalks, roads, drives, buildings, lawns, trees, shrubs, and landscape work adjacent to or to remain on the site.

B. Miscellaneous excavating and backfilling as required.

C. Remove certain portions of site improvements.

D. All demolition and dismantling required to complete the alteration work at the existing structures and the construction of the new addition.

1. Demolition of existing interior walls, and associated materials; cutting and patching.
    a. Do not disrupt or remove any of the existing gypsum drywall ceilings without the explicit consent of the architect and/or owner.
2. Cutting of openings, pockets, chases, or depressions, etc., as required for alteration work.
3. All items of work indicated to be removed by other trades shall be coordinated with specific trade involved before proceeding with the demolition.

E. The owner will remove any materials or equipment which he desires.

1.03 PROTECTION

A. Provide and maintain suitable barricades, shelters, lights and danger signals during the progress of the work. They shall meet the requirements of State and/or local building codes. Assume full responsibility of barriers to completion of contract and remove same.

B. Take reasonable and adequate precautions to protect the Owner's property from damage during demolition work, moving of debris, restore any damage to the Owner's property due to the aforementioned work or replace in a manner satisfactory to the Architect.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 CONDUCT OF WORK

A. Remove all work carefully and only to the extent required for the final work. Remove all loose or damaged materials caused by demolition, or noted, or specified to be removed.

B. Conduct all operations with a minimum of noise.

C. Erect dustproof partition where demolition work is in progress and as directed. Such partitions shall remain in place until their removal as directed.

D. Carefully remove any materials and equipment noted or specified to be reused or salvaged and handle with care to minimize damage.

E. Where openings are to be cut in existing structure, cut such openings with care, where materials are to be removed, remove such items with care to minimize

damage to adjacent materials.

F. Neatly cut depressions, chases and the like with carborundum saws.

G. The use of pneumatic or electric hammers for demolition and cutting purposes within the existing building will not be permitted, without prior approval of the Owner.

H. After the demolition work in any area is completed, clean all floors, walls and ceilings, etc., before any new construction is started.

I. Where patching is required, patch all areas using the same materials and finish as adjacent surfaces and patch in such a manner that the repaired area is in visual harmony with the surrounding areas.

J. Properly repair any adjoining surfaces to original condition that are damaged by the Contractor.

3.02 DISPOSAL

A. Remove all materials or debris resulting from demolition operations from the site promptly. No accumulation of debris will be permitted.

END OF SECTION

SECTION 03 11 00
CONCRETE FORMWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Formwork for cast-in-place concrete, including, but not limited to:

1. Waterstops.
2. Installation of embedded items.
3. Shoring, Bracing and Anchorage, including openings for other Work.
4. Form Accessories
5. Form Stripping.

1.2 DESIGN REQUIREMENTS

A. Design, engineer, and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.3 SUBMITTALS

A. Shop Drawings: Show form construction including jointing and other items that affect exposed concrete visually. The Architect's review is for general architectural applications and features only. Designing formwork for structural stability and efficiency is the Contractor's responsibility. Submit Drawings showing dimensions, materials, bracing, tie- hole layouts for exposed tie holes, and arrangement of joints.

B. Product Data: Provide data on accessory materials and installation requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 347R - Guide to Formwork for Concrete.

1.5 QUALIFICATIONS

A. Design formwork under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of Arizona.

DELIVERY, STORAGE AND HANDLING

B. Deliver, store, protect and handle products to site to prevent deterioration and damage.

C. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.6 COORDINATION

A. Coordinate this Section with other Sections of Work which require attachment of components to formwork.

B. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, request instructions from Architect’s Structural Engineer before proceeding.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Forms for Concealed Concrete: Plywood, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit. For use in below grade concrete or concrete covered by another finish. Not for use where finished concrete is exposed to view.

1. Plywood, Douglas Fir species; APA grade-trademarked; BB Plyform, Class 1, Exterior Grade as per PS1.
2. Lumber: Spruce, Pine, or Fir species; construction grade, with grade stamp

clearly visible.

3. Plywood shall have mill applied release agent and edge seal.

B. Forms for Exposed Concrete: Plywood, MDO, tempered concrete-form-grade hardboard, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surface. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system where shown on Drawings. For use in exposed to view concrete that is not covered by another finish.

1. MDO (medium density overlay), class 1 or better, with mill applied release agent and edge seal.
2. Use overlaid plywood complying with U.S. Product Standard PS-1 "A-C of B-B High Density Overlaid Concrete Form," Class I, Exterior grade or better.
3. Tempered concrete-form-grade hardboard, with applied release agent and edge seal.
4. MDO, plywood, and hardboard forms shall have mill applied release agent and edge sealed.

C. Forms for Cylindrical Columns and Supports. Metal, glass-fiber-reinforced plastic, or paper or fiber tubes that will produce smooth surfaces without joint indications. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.

D. PVC Sleeves: ASTM D1758, PVC 1120 compound, Schedule 40.

E. Polystyrene Void Forms: Rigid extruded polystyrene meeting ASTM C578, Type VI with 40 psi compressive strength.

2.2 FORMWORK ACCESSORIES

A. Form Ties: Removable or snap-off type, free of defects that could leave holes larger than one inch in concrete surface.

B. Form Release Agent: Commercial formulation, 100 percent biodegradable, zero VOC, vegetable base, colorless, which will not stain concrete, or impair natural bonding or color characteristics of subsequent treatments and coatings applied to concrete surfaces.

1. Do not use petroleum-based agents. Paraffin and waxes shall not be used when a concrete finish is required.

C. Corners: Chamfered wood strip type or vinyl bead; 3/4-inch x 3/4 inch size; maximum possible lengths.

D. Flashing Reglets: Galvanized steel 22 gauge thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.

E. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

F. Waterstops: Provide one of the following:

1. Polyvinyl chloride or rubber, flat or dumbbell type, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing; width as shown on Drawings. Comply with Corps of Engineers CRD-C572 for PVC and CRD-C513 for rubber.
2. Self-Expanding Waterstop Strips: self-expanding waterstop strips of reinforced sodium bentonite or other hydrophylic material.
   a. Products: Subject to compliance with requirements, provide one of the following:
      1) Volclay Waterstop RX; Colloid Environmental Technologies Co.
      2) Hydrotite; Greenstreak.
      3) Mirastop; Mirafi Moisture Protection, Div. Of Royal Ten Cate (USA), Inc.
      4) Superstop; Progress Unlimited.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels, and centers before proceeding with formwork. Ensure that dimensions agree with Drawings.

3.2 EARTH FORMS

A. Earth Forms:
   1. Earth forms are only allowed when and where approved by the Structural Engineer.
   2. Hand trim sides and bottom of earth forms. Remove loose soil in pour cavity prior to placing concrete.

3.3 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
B. Arrange formwork for exposed concrete in an orderly and symmetrical manner to produce smooth concrete finish indicated. Arrange form ties in exposed locations in consistent even rows and spacing acceptable to Architect.
C. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
D. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping.
E. Align joints and make watertight. Keep form joints to a minimum.
F. Obtain approval from Architect before framing openings in structural members which are not indicated on Drawings.
G. Provide chamfer strips on external corners where exposed in the finished Work.
H. PVC Sleeves: Set PVC sleeves in proper alignment and position. End of sleeves shall be flush with finished concrete surface.
I. Use polystyrene to form void spaces where indicated on Drawings.

3.4 APPLICATION - FORM RELEASE AGENT

A. Coat contact surfaces of forms with a form coating compound before reinforcement steel, anchoring devices, or embedded items are placed. Thin form-coating compounds with thinning agent and apply as specified in manufacturer's instructions. Do not allow excess form-coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed.
B. Do not apply form release agent where concrete surfaces will receive applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in or passing through concrete work.
B. Locate and set in place items which will be cast directly into concrete.
C. Coordinate Work of other Sections in forming and placing openings, slots, reglets, recesses, chases, sleeves, bolts, anchors, and other inserts.
D. Install accessories in accordance with Manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.
E. Waterstops: Install waterstops as specified in Section 03 30 00.
F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.6 JOINTS

A. Comply with requirements of Section 03 30 00.

3.7 FORM CLEANING

A. Clean and remove foreign matter within forms as erection proceeds.
B. Clean formed cavities of debris prior to placing concrete.
C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.8 FORMWORK TOLERANCES

A. Design and construct formwork in accordance with ACI 301.
B. Construct formwork as required to produce concrete members of size, shape, configuration, alignment, elevation and position indicated on Drawings within tolerance limits of ACI 301.
C. Surface Irregularities: Construct and maintain formwork to produce concrete having the following formed finish Class and permitted abrupt or gradual irregularities as designated by ACI 347-01.
    1. All vertical and horizontal exterior exposed surfaces: Class A, 1/8 inch.
    2. Other surfaces prominently exposed to public view: Class A, 1/8 inch.
    3. Concealed surfaces where covered by another finish: Class C, 1/2 inch, except abrupt irregularities shall be limited to 1/4 inch.

3.9 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that Work is in accordance with formwork design, and that support, fastenings, wedges, ties and items are secure.
B. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.10 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads. Forms shall be removed in accordance with the requirements of the General Structural Notes.
B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.
D. Forms for vertical elements such as walls, columns, and pilasters shall not be removed or disturbed for at least 7 days from the date of last placement.
E. Forms for slabs, girders, beams and the like and retaining walls shall not be removed or disturbed for at least 14 days from date of last placement. It may be required that such forms be left in place longer than the above specified period. The length of time they shall remain in place will depend on the system of forming and shoring, and shall be in accordance with the requirements of the General Structural Notes.
F. Formwork for stem walls and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage.
G. Cure exposed concrete in accordance with Section 03 30 00 whenever the formwork is removed during the curing period.

3.11 REMOVAL STRENGTH

A. When formwork removal is based on the concrete reaching its specified 28 day strength (or a specified percentage thereof), the concrete shall be presumed to have strength when either of the following conditions has been met:
    1. When test cylinders, field cured under the most unfavorable conditions prevailing for any portion of the concrete represented, have reached the required strength.
    2. When the concrete has been cured for the same length of time as the age, at test, of laboratory cured cylinders which reach the required strength. The

length of time concrete has been cured in the field shall be determined by the cumulative number of days or fractions thereof, not necessarily consecutive, during which the temperature of the air in contact with the concrete is above 50 degrees F. and the concrete has been damp or thoroughly sealed from evaporation and loss of moisture.

END OF SECTION

SECTION 03 20 00
CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY
- A. Section Includes: Concrete reinforcement as shown on the Drawings and as specified.
- B. Related Sections:
  1. Section 03 30 00 – Cast-in-Place Concrete.

1.2 QUALITY ASSURANCE
- A. Comply with the Following:
  1. ACI 301-10 – Specifications for Structural Concrete, Chapter 5, except where more exacting requirements are specified.
  2. ACI 315-99 – Details and Detailing of Concrete Reinforcement.
  3. ACI 318-11 – Building Code Requirements for Structural Concrete.
  4. Concrete Reinforcing Steel Institute (CRSI), Design Handbook, 2008 Edition.
- B. Comply with requirements in AWS-D12.1, except where more exacting requirements are specified in the Contract Documents.

1.3 SUBMITTALS
- A. Shop Drawings: Submit Drawings showing bending and placing of reinforcing. Comply with ACI 315 requirements including diagrammatic elevations of walls at a scale sufficiently large to clearly show the position and erection marks of marginal bars and their dowels and splices and bar arrangement for more than one layer of reinforcing steel in concrete sections.
- B. Certificates: Submit certified mill test reports for review prior to fabrication.

1.4 DELIVERY, STORAGE AND HANDLING
- A. Shipping: Deliver reinforcement to the Project site bundled, tagged and marked to facilitate sorting and placing. Tags shall indicate bar sizes, lengths, grade and other information corresponding to markings shown on placement diagrams.
- B. Storage and Protection: Store reinforcement at the site off the ground and in a manner to prevent damage to the materials.

PART 2 PRODUCTS

2.1 MATERIALS
- A. Reinforcing Steel: New billet-steel, deformed bars conforming to ASTM A615, Grade 60, with a minimum yield of 60 ksi for all bars, except stirrups, ties and indicated field bent bars and all bars No. 4 and smaller in slabs-on-grade may be ASTM A615, Grade 40, with a minimum yield of 40 ksi. Grade 60 bars indicated to be welded shall be ASTM A706.
- B. Welded Wire Fabric: ASTM A185 using bright steel wire meeting the requirements of ASTM A82. Provide in flat sheets only. Gauges and dimensions as noted on the Drawings.
- C. Chairs: Galvanized steel or plastic tipped, wire bar type, and precast concrete block type meeting requirements of CRSI Manual of Standard Practice.
- D. Tie Wire: ASTM A82, 16 gauge or heavier, black annealed.
- E. Welding Rods: E-70 Series for A615 Grade 40 (ASTM A615M, Grade 300) reinforcing, and E-90 Series for A706 reinforcing; low hydrogen conforming to AWS A-5.1.
- F. Fiber Reinforcing is specified in Section 03 30 00.

2.2 FABRICATION

A. Do not fabricate reinforcing steel until shop drawings are reviewed and approved.
B. Fabricate reinforcing steel in accordance with fabricating tolerances of ACI 315.
C. Shop fabricate bars as far as is practical. Bend bars cold. Make bends for stirrups and ties around pins having diameters at least 2 times the thickness of the bars; for other bars 1 inch diameter and smaller, 6 times the thickness; for larger bars 8 times the thickness.

PART 3 EXECUTION

3.1 EXAMINATION

A. Determine weldability of reinforcing steel by laboratory chemical analysis of steel. Only steel conforming to chemical requirements specified in AWS D12.1 may be welded.

3.2 PLACING REINFORCEMENT

A. General:
   1. Place in accordance with ACI 318-11, CRSI Code of Standard Practice for "Placing Reinforcing Bars," and as shown on Drawings.
   2. Clean reinforcing steel of loose rust and mill scale, earth, ice, and other deleterious materials which reduce or destroy bond with concrete.
   3. Accurately place reinforcement and securely tie at intersections with 16 gauge black annealed wire.
   4. Maintain reinforcing in proper position by chairs, bar supports or other approved devices.
   5. Bars in footings shall be supported on precast concrete blocks.
   6. The bending or field cutting of bars around openings or sleeves will not be permitted.
   7. At slab-on-grade where base course fill materials will not support chair lags, provide supports with sand plates or precast concrete blocks.
B. Tension and compression laps shall be in accordance with the lap schedule on the structural Drawings. All splice locations are subject to approval by the Structural Engineer.
C. Concrete protection of reinforcing shall be in accordance with General Structural Notes on Drawings.
D. Clear distance between bars shall be not less than 1-1/2 times the maximum size of coarse aggregate unless noted otherwise.
E. Corner Reinforcing: Provide corner bars of same size and spacing as horizontal reinforcing steel. Lap with horizontal reinforcing 30 bar diameters or 18 inches minimum length.
F. Reinforcing at Construction/Control Joints: Continue reinforcing steel through construction joints unless noted otherwise. Discontinue reinforcing steel 2 inches from preformed construction joints in slabs-on-grade. Cut alternate longitudinal bars at weakened plane control joints in walls.
G. Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits or embedded items. If bars are moved more than one bar diameter or enough to exceed code tolerances, resulting arrangement of bars shall be subject to review of Architect.
H. Bars with kinks or bends not indicated shall not be used. Reinforcement shall not be bent or be straightened in a manner that will weaken the material, or be bent after being partially embedded in hardened concrete.
I. Wire mesh in slabs: Laps in welded wire fabric shall be made so that the overlap, measured between outermost cross wires of each fabric sheet, is not less than the spacing of cross wires plus 2 inches.

3.3 CLEANING

A. During the course of the Work and on completion, remove excess materials, equipment and debris and dispose of off premises. Leave Work in clean condition.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Cast-in-place concrete including, but not limited to, the following:

1. Building footings, foundations and slabs on grade including finishing, surface repair and curing, as indicated on Drawings.
2. Underslab vapor barrier for slabs-on-grade.
3. Concrete fill for composite floor decks.
4. Concrete fill for metal pan steel stairs as specified in Section 05 51 00.
5. Site structures including, but not limited to, footings and foundations for site walls, enclosures, site lighting supports, electrical and mechanical equipment support pads, and other site furnishing and equipment requiring cast-in-place concrete items.
6. Concrete fill for steel pipe bollards specified in Section 05 50 00.
7. Other items as indicated.

B. Related Sections:

1. Section 03 20 00 – Concrete Reinforcement

1.2 SYSTEM DESCRIPTION

A. Performance Requirements: Interior slabs on grade scheduled to receive applied floor finishes (VCT, carpet, etc.) shall be tested as specified herein under Field Quality Control Calcium chloride test requirements. Moisture vapor from the floor must be less than 3 pounds per 1,000 square feet per 24 hours.

1.3 SUBMITTALS

A. Mix Design: Submit mix design for each class of concrete in accordance with ACI-310, Section 4.

1. Submit with mix design results of laboratory tests performed within previous 6 months indicating aggregates from proposed source comply with requirements of ASTM C33 or C330 as applicable.
2. Submit written reports of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been approved.
3. Lightweight concrete: Submit data showing that the mix meets requirements regarding shrinkage, split cylinder strength, and modulus of elasticity.
4. Submit the proposed area of use for each mix design submitted (footings, stemwalls, slabs, walls, columns, etc.).
5. Review of mix designs by Architect and/or Engineer shall in no way relieve the Contractor of responsibility for the performance of the concrete.

B. Product Data: Submit manufacturer's product data with application and installation instructions for accessory products, proprietary materials and admixtures.

C. Test Reports: Submit copies of test reports for concrete compressive strength, air content, temperature, and slump. Submit copies of granular base course test reports.

D. Shop Drawings: Submit shop drawing showing proposed location of construction joints, expansion/contraction joints and control joints and obtain approval of same from Architect prior to construction.

E. Samples of materials, including names, sources and descriptions, of the following:

1. Color finishes.
2. Vapor Barrier.
3. 4 inch long samples of expansion/contraction joint and control joint

1.4 QUALITY ASSURANCE

A. Standards: Meet the requirements of the following:
   1. ACI 301-10 – Specifications for Structural Concrete.
   2. ACI 306.1-90 Standard Specification for Cold Weather Concreting
   3. ACI 318-11 – Building Code Requirements for Structural Concrete.
   4. Standard for measuring, mixing and delivery of ready mixed concrete shall be ASTM C94, except that time in mixer after water has been added at batch plant is limited to 1-1/2 hours.
   5. Job-mixed concrete shall be subject to Architect's review of design, mixing and handling procedures.

B. Field Samples:
   1. Provide on-site sample(s) of exposed flatwork concrete with integral color or other decorative concrete finishes specified in Section 03 35 00, showing texture and color before proceeding with finish to be used on this Project.
   2. Sample(s) shall be minimum 4'-0" square and have at least one longitudinal and one transverse joint.
   3. Construct sample panels in ample time to allow for finishing and curing before requesting Architect to review.
   4. Construct where directed by Architect and prepare successive sample panels as required until finish acceptable to Architect is produced.
   5. Since sample panels will constitute a basis of acceptance or rejection of the completed Work, do not remove sample panels until authorized in writing by the Architect. Dispose of sample panels in a legal manner when authorized.

C. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94 requirements for production facilities and equipment. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

D. Pre-Installation Conference:
   1. Contractor shall conduct a meeting at Project site to review proposed mix designs and discuss required methods and procedures to achieve required concrete construction.
   2. Contractor shall distribute meeting agenda to all attendees a minimum of 7 days prior to the scheduled date meeting.
   3. Attendees: Responsible representatives of every party who is concerned with the concrete work to attend the conference, including but not limited to the following:
      a. Contractor's superintendent.
      b. Laboratory responsible for concrete design mix.
      c. Laboratory responsible for field quality control.
      d. Concrete subcontractor.
      e. Ready-mix concrete producer.
      f. Admixture manufacturer(s).
      g. Concrete placement equipment manufacturer(s).
   4. Meeting minutes will be taken by the Contractor for distribution to all attendees within 5 days of meeting. Contractor shall also distribute copy of meeting minutes to Owner, Structural Engineer, and Architect.
   5. Minutes shall include statement by concrete subcontractor indicating proposed mix design, placement, finishing and curing procedures can produce the concrete quality required by these specifications.

E. Static Coefficient of Friction: Sealed concrete floors shall have a tested coefficient of friction of 0.71 minimum dry, 0.6 minimum wet for level surfaces and treads of stairs and
0.8 minimum wet or dry for ramp surfaces when tested in accordance with ASTM D2047 / UL410.

1.5 PROJECT CONDITIONS

A. Rain protection: Do not place concrete during rain unless adequate protection has

been provided.

B. Cold weather protection: Protect concrete work from physical damage or reduced strength caused by frost, freezing or low temperatures. Comply with ACI 306.1.

C. Hot weather protection: When hot weather conditions exist that would impair quality and strength of concrete, reduce delivery time of ready mix concrete, lower the temperature of materials, or add retarder to ensure that the concrete is plastic. Retempering with water is not allowed. Comply with ACI 305R and 305.1-06.

PART 2 PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type V where in contact with earth, Type II elsewhere, alkali content not to exceed 0.6 percent. Use one brand and type of cement throughout Project unless otherwise specified.

B. Aggregates:

1. Regular Weight Structural Concrete: Clean, coarse aggregate and gravel, free from foreign matter, conforming to ASTM C33. Aggregate shall be graded from coarse to fine in accordance with ASTM C33, Size 67.
2. Aggregate for lightweight structural concrete: ASTM C330 except use only shale, slate or clay prepared in a rotary kiln. Test results from an acceptable testing laboratory shall show compliance with the performance requirements of this Specification. Soundness shall have a maximum 15 percent loss when tested in accordance with ASTM C88. Absorption shall have a maximum 15 percent when tested in accordance with ASTM C127.

C. Admixtures:

1. Air-Entraining Admixture: ASTM C260, certified by manufacturer to be compatible with other required admixtures. Provide one of the following:
   a. AEA-92 and Air 40, Euclid Chemical Co. www.euclidchemical.com
   b. Sika AER, Sika Corp. www.sikaconstruction.com
   c. Master Builders MB-VR or MB-AE, BASF Admixtures www.basf- admixtures.com
2. Water-Reducing Admixture: ASTM C494, Type A, and containing not more than 0.05 percent chloride ions. Provide one of the following:
   a. Eucon NW or Eucon WR 91, Euclid Chemical Co.
   b. Master Builders Pozzolith 322N, BASF Admixtures
   c. Plastocrete 160, Sika Chemical Corp.
3. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C494, Type F or Type G and containing not more than 0.05 percent chloride ions. Provide one of the following:
   a. Eucon 37/Eucon 1037, or Plastol Series, Euclid Chemical Co.
   b. Daracem 100 or ADVA Flow, W.R. Grace & Co.
   c. Master Builders Rheobuild 1000 or Glenium 3030, BASF Admixtures.
4. High-Range, Water-Reducing, and Retarding (Superplasticizer): ASTM C 494, Type G. Provide one of the following:
   a. Eucon 537, Euclid Chemical Company
   b. Daracem 100, W.R. Grace & Co.
   c. Master Builders Rheobuild 916, BASF Admixtures
5. Non-Chloride, Non-Corrosive Accelerating Admixture: The admixture shall conform to ASTM C494, Type C or E, and not contain more chloride ions than are present in municipal drinking water. The admixture manufacturer must have long-term non-corrosive test data from an independent testing laboratory

(of at least a year's duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures. Provide one of the following:

a. Accelguard 80, 90 or NCA, Euclid Chemical Co.

6. Water-Reducing, Retarding Admixture: ASTM C494, Type D, and contain not more than 0.05 percent chloride ions. Provide one of the following:
   a. Eucon NR or Eucon Retarder 100, Euclid Chemical Co.
   b. Master Builders Pozzolith Retarder, BASF Admixtures.
   c. Plastiment, Sika Chemical Co.
7. Fly ash admixture: only as approved by structural drawings.
8. Use set-retarding admixtures during hot weather only when approved by Architect.
9. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions are not permitted.

D. Fiber Reinforcement (Fill for stair treads, landings, and as otherwise indicated): Polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116, Type III, Section 4.1.3, not less than 3/4 inch long.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Tuf-Strand SF, Euclid Chemical Co. www.euclidchemical.com
      b. Fibermesh 650, Propex Concrete Systems www.fibermesh.com
      c. Forta, Forta Corp. www.forta-ferro.com
      d. Grace Fibers, W.R. Grace & Co. www.na.gracecontruction.com

E. Water: Potable.

F. Coloring Agent:
   1. ASTM C979.
   2. Approved Manufacturers:
      a. Bayer Coporation, Bayferrox Pigment.
      b. Frank Davis Company
      c. L.M. Scofield Company
      d. Solomon Grind-Chem Service, Inc.
   3. Color(s): As selected by Architect.
   4. Color weight shall not exceed 10 percent of the weight of the cement.

2.2 ACCESSORIES

A. Bonding Agents and Repair Products:
   1. Interior Only (PVA): L&M Construction Chemicals EVERWELD www.lmcc.com; EucoWeld, Euclid Chemical Company www.euclidchemical.com; US Spec Bondcoat PVA www.usspec.com; or Larsens' Weld Crete www.larsenproducts.com
   2. Interior Only for Bonding Existing Concrete to Fresh Concrete (Epoxy): Sikadur 32, Hi-Mod, Sika www.sikausa.com; Euco 452 Series, Euclid Chemical Company www.euclidchemical.com; Maxi-Bond 2500, US Spec www.usspec.com; or Rezi- Weld, W.R. Meadows www.wrmeadows.com.
   3. Exterior and Interior Bonding Admixture (acrylic latex): SBR Latex or Flexcon Euclid Chemical Company www.euclidchemical.com; Intralok, W.R. Meadows www.wrmeadows.com; Acylcoat, US Spec www.usspec.com; or Dayton Bond J40, Dayton Superior www.daytonsuperior.com.
   4. Polymer Repair Compounds: Polymer and microsilica modified cementitious based compounds.
      a. Acceptable Products: Subject to compliance with requirements,

provide one of the following:

b. Horizontal Locations:
   1) Sikatop 121 or 122, Sika Chemical www.sikausa.com
   2) Thin Top Supreme, Concrete Top Supreme, Euclid Chemical Company www.euclidchemical.com
   3) TP Mortar, US Spec www.usspec.com

c. Vertical or Overhead Locations:
   1) Sikatop 123, Sika Chemical
   2) V/O Patch, US Spec
   3) Verticoat, Verticoat Supreme, Concrete Top Supreme, Euclid Chemical Company.

5. Underlayment Topping: Free-flowing, self-leveling, pumpable cementitious base compound.
   a. Acceptable Products: Subject to compliance with requirements, provide one of the following:
      1) Ardex K-15, Ardex Inc.
      2) Flo-Top or Super Flo-Top, Euclid Chemical Company
      3) Self-Leveling Underlayment, US Spec
      4) Underlayment 110, BASF

6. Repair Topping: Latex modified, sandless cementitious mortar topping with bond strength meeting or exceeding requirements of ASTM C1059.
   a. Acceptable Products: Subject to compliance with requirements, provide one of the following:
      1) Thin Top Supreme, Euclid Chemical Company
      2) TP Mortar, US Spec
      3) As approved by Architect.

B. Non-Shrink Grout:
1. Premixed or prepackaged, non-metallic, non-gaseous, bleed free compound; non-shrink when tested in accordance with ASTM C 1107, Grade B at a fluid (flow cone) consistency of 20 to 30 seconds.
2. Attain minimum compressive strength of 7,000 psi in 28 days at above fluid consistency.
3. Fluid grouts: Remain workable, flow through flow cone after 20 minutes with slight agitation, in temperatures from 40 to 70 degrees F.
   a. Acceptable Products: Subject to compliance with requirements, provide one of the following:
      1) Suregrip High Performance, Dayton Superior, www.daytonsuperior.com
      2) Sikagrout 212, Sika www.sikausa.com
      3) Master Builders (Masterflow 713) www.masterbuilders.com
      4) W.R. Meadows No. 588 Grout www.wrmeadows.com
      5) L&M Construction Chemicals (DURAGROUT) www.lmcc.com
      6) US Spec "GP Grout" www.usspec.com
      7) Euclid N-S Grout www.euclidchemical.com.
4. High Flow Fluid Grouts: High flow grout shall achieve 95 percent contact when placed under an 18 inch x 36 inch base plate, remain workable, and flow through cone after 60 minutes in temperature from 70 to 90 degrees F.
   a. Acceptable Products: Subject to compliance with requirements, provide one of the following:
      1) Hi-Flo Grout, Euclid Chemical Company

www.euclidchemical.com

2) US Spec "MP Grout" www.usspec.com

3) Chemrex Masterflow 928, BASF www.chemrex.com

C. Liquid Curing and Sealing Compound:

1. Verify that specified curing compound is compatible with the floor finish material(s) and adhesive(s) that will be applied to floor surface prior to delivery of curing compound to jobsite. If it is determined that the curing compound is not compatible with the floor finish material(s) and adhesive(s) that will be applied to floor surface, Contractor shall immediately notify Architect.

2. Clear Curing and Sealing Compound (Voc Compliant, 350 g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class A, 25% solids content minimum. Moisture loss shall be not more than 0.40 Kg/m^2 when applied at 300 sq. ft./gal. Manufacturer's certification is required. Subject to project requirements provide one of the following products:

   a. Chemrex Kure 1315, BASF Construction Chemicals www.chemrex.com.

   b. Lumiseal WB, L&M Construction Chemicals www.lmcc.com

   c. Radiance UV-25, US Spec www.usspec.com

   d. Super Diamond Clear VOX, Euclid Chemical Company www.euclidchemical.com

   e. VOCCOMP-30, W.R. Meadows www.wrmeadows.com

3. Dissipating Hydrocarbon Resin Curing Compound: ASTM C309, VOC compliant, 350 g/l, for use on slabs receiving subsequent applied finishes and were noted on Drawings. Subject to compliance with requirements, provide one of the following:

   a. Kurez DR VOX or Kurez W VOX, Euclid Chemical Company www.euclidchemical.com

   b. Maxcure Resin Clear HS, US Spec www.usspec.com

D. Epoxy Anchoring Adhesive: 2-component, high modulus, 100 percent solids epoxy gel adhesive complying with ASTM C881.

1. Acceptable Products: Subject to compliance with requirements, provide one of the following:

   a. Hilti HIT-RE 500-SD www.hilti.com

   b. Simpson Strong-Tie Co. Set-XP www.simpsonanchors.com .

E. Preformed Construction Joint: Standard design plastikey rigid plastic, tongue and groove key joint; 3-1/2 inch vertical dimension for 4 inch slabs, or thickness as required by slab depth. For use only in slabs not exposed to vehicular traffic.

F. Preformed Control Joint: Rigid plastic or metal strip with removable top section.

G. Preformed Expansion Joint Filler: Asphalt saturated fiberboard, 1/2 inch thick, meeting the requirements of ASTM D 1751.

H. Sealer: VOC compliant, acrylic copolymer type.

1. Antimicrobial Penetrating Concrete Sealer (Slabs Surfaces Under Access Flooring): Provide the following at all recessed slab areas where access flooring will be installed (Casino and IT areas): Penetrating concrete sealer and/or densifier which includes an antimicrobial additive or property, or has a naturally antimicrobial PH level. Acceptable products include, but are not limited to the following:

   a. Norganix Biosecurity Concrete Sealant www.norganix.com

   b. BoneDry Penetrating Concrete Sealer www.bonedryproducts.com

   c. Xtreme Hard Densifier www.xtremeharddensifier.com

   d. Other antimicrobial penetrating concrete sealer as approved by

Architect.

2. Interior (Not for use at access floor areas): ASTM C1315, Class A. Subject to requirements, Provide one of the following:
   a. VOCOMP-30, W. R. Meadows.
   b. Euclid Super Aqua Cure VOX, Euclid Chemical Company.
   c. Dress & Seal WB #30, L&M Construction Chemicals.
   d. J-19, Dayton Superior.
3. Exterior: ASTM C1315, Class A. Provide one of the following:
   a. Euclid Super Diamond Clear VOX, Euclid Chemical Company.
   b. Lumiseal WB, L&M Construction Chemicals.
   c. VOCOMP-30, W. R. Meadows.
   d. Radiance UV-25, US Spec.

I. Liquid Sealer Densifier: High performance, deeply penetrating concrete densifier; odorless, colorless, VOC compliant, non-yellowing siliconate based solution designed to harden, dustproof and protect concrete floors subjected to heavy vehicular traffic and to resist black rubber tire marks on concrete surfaces. The compound must contain a minimum solids content of 20 percent of which 50 percent is siliconate. Subject to project requirements provide one of the following products:
   1. Ashford Formula, Curecrete Chemical Company, Inc. www.ashfordformula.com
   2. Diamond Hard, Euclid Chemical Company www.euclidchemical.com .
   3. SealHard, L&M Construction Chemicals www.lmcc.com
   4. Liquihard, W. R. Meadows www.wrmeadows.com
   5. J-17 Surehard, Dayton-Superior www.daytonsuprerior.com
   6. Industraseal, US Spec www.usspec.com"

J. Leveling Agent: Sonneborn Sonoflow, Euclid Flo-Top, Ardex K-15, L&M Construction Chemicals Levelex, US Spec "Self-Leveling Underlayment, or Dayton-Superior Levelayer 1 are acceptable products.

K. Vapor Barrier: ASTM E1745, Meets or exceeds Class A, manufactured from prime virgin resins and complying with the following:
   1. Permeance Rating:
      a. New Material: Less than 0.01 perms ($gr/ft^2/hr/in\text{-}Hg$) when tested in accordance to ASTM E96 or ASTM F1249.
      b. After Mandatory Conditioning: Less than 0.01 perms ($gr/ft^2/hr/in\text{-}Hg$) when tested in accordance with ASTM E154, Sections 8, 11, 12 and 13.
   2. Minimum Thickness: 15 mils in accordance with ACI 302.2R-06.
   3. Puncture Resistance: Minimum 2200 grams when tested in accordance with ASTM D1709.
   4. Tensile Strength: Minimum 45.0 lbf/in when tested in accordance with ASTM D882.
   5. Acceptable Products:
      a. Stego Wrap (15 mil) Vapor Barrier, Stego Industries, L.L.C., (877) 464- 7834 www.stegoindustries.com
      b. Vaporguard, Reef Industries www.reefindustries.com
   6. Accessories:
      a. Seam Tape and Mastic: Provide manufacturer's recommended seam tape and vapor proofing mastic with WVTR of 0.3 perms or lower when tested in accordance with ASTM E96.
      b. Pipe Boots: Construct boots from vapor barrier material, pressure sensitive tape and/or mastic in accordance with manufacturer's

instructions.

c. Termination Bars: As recommended by manufacturer for terminating vapor barrier on vertical foundation walls.

L. Concrete Accessories: Gateway Engineering Company, Dayton-Superior Corporation, or Burke Concrete Accessories.

M. Evaporation Retarder:

1. Type: Monomolecular film, compatible with subsequent coatings and floor finishes.
2. Acceptable Manufacturer and Products: L&M Construction Chemicals (E-Con), Master Builders (Confilm), Sika (Sika Film), W.R. Meadows (Evapre), US Spec (Monofilm ER), or Dayton Superior (Surefilm J-74)."

N. Felt: Asphalt-saturated organic felt, weighing 30 pounds per 100 square feet, meeting the requirements of ASTM D226.

2.3 MIXES

A. Design of Mixes: Prepare design mixes for each type and strength of concrete by either laboratory trial mixture or field experience methods as specified in ACI 301, Section 4. If trial mixture method is used, employ an independent testing facility, acceptable to Architect, for preparing and reporting proposed mix designs.

B. Selection of proportions for normal weight concrete: ACI 301.

C. Mix and deliver ready-mixed concrete in accordance with requirements of ASTM C94, Option A.

1. Not more than 90 minutes shall elapse from time water is introduced into the concrete mixture until completion of placement.
2. Do not add water to mix that has stiffened to increase its workability.
3. At no time shall concrete mix exceed a bulb thermometer reading of 90 degrees
F. or over.
4. Use ice or other method as reviewed by Architect, to keep concrete below 90 degrees F. temperature.

D. All concrete must contain the specified water-reducing admixture or the specified high- range water-reducing admixture (superplasticizer). All thin concrete slabs, less than 8 inches in thickness placed at air temperatures below 50 degrees F shall contain the specified non-corrosive, non-chloride accelerator. All concrete slabs placed at air temperatures above 90 degrees F may require the use of a water reducing retarding admixtures.

E. All concrete required to be air entrained shall contain an approved air entraining admixture. All pumped concrete, concrete for industrial slabs, synthetic fiber concrete, architectural concrete, self-consolidating concrete, concrete required to be watertight or concrete with a water/cement ratio below 0.50 shall contain the specified high-range water-reducing admixture(superplasticizer).

F. Durability Requirements - Water/Cementitious Ratio:

1. All concrete subject to freezing and thawing shall have a maximum water/cementitious ratio of 0.50 (4000 psi at 28 days or more).
2. Water-cement ratio for concrete used for interior slab on grade construction: 0.40 to 0.45.
3. All concrete required to be watertight shall have a water/cement ratio of 0.45 (4500 psi at 28 days or more).

G. Air Entraining Admixture:

1. All concrete exposed to freezing and thawing and/or required to be watertight shall have an air content of 4.5 to 7.5 percent in accordance with ACI 212.3R.
2. All interior, slabs subject to vehicular abrasion, shall have a maximum air

content of 3 percent.

3. Structural lightweight concrete may have entrained air content up to a maximum of 10 percent.
4. Air content in fire rated slabs shall comply with the requirements in the specified UL Listing

H. Compressive strength (28 day): As shown on Structural Drawings.

I. Slump; for consolidation by vibration: As shown on Structural Drawings.

J. Mix coloring agent for integrally colored decorative concrete in strict compliance with the Manufacturer's printed instructions.

K. Lightweight concrete:

1. Structural lightweight concrete shall have a measured equilibrium density not exceeding 115 lbs per cubic foot when tested in accordance with ASTM C567.
2. Splitting tensile strength, when tested in accordance with ASTM C 496, shall be the minimum as follows for given compressive strength:
   a. 4,000 psi, fct equals 425 psi;
   b. 5,000 psi, fct equals 475 psi.
3. Modulus of elasticity shall be a minimum of 2,400,000 lbs per square inch.
4. Drying shrinkage, when tested in accordance with ASTM C330, shall be a maximum 0.06 percent at age 1 year or 0.035 percent at 28 days.
5. Base cement factor and water-cement ratio on degree of saturation and absorption characteristics of the lightweight aggregates stockpiled for use.
6. Shrinkage reducing admixture or a shrinkage compensating admixture may be used to control drying shrinkage if acceptable to the Architect.
7. Substitute natural sand for lightweight fines.

L. Fiber Reinforcement: Add at manufacturer’s recommended rate but not less than 3.0 lbs/cu. Yd..

PART 3 EXECUTION

3.1 COORDINATION

A. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel. Set screeds accurately. Embedded items shall be accurately aligned and adequately supported. Verify installation of mechanical, plumbing, and electrical items to be embedded in concrete. Correct any unsatisfactory condition before proceeding further.

3.2 PREPARATION

A. Prior to placing concrete:
   1. Clean equipment involved.
   2. Remove debris and foreign material from the forms.
   3. Remove concrete laitance from reinforcing steel.
   4. Wet wood forms and masonry units in contact with concrete, unless otherwise prepared.
   5. Clean and roughen surfaces of previously placed concrete.
   6. Remove excess water before placing concrete.

B. No wood other than built-in bucks or nailing blocks will be permitted to remain permanently inside the forms.

C. Coordinate the necessary Trades as required to provide the sleeves, bolts, anchors, holes, etc., to be built in.

D. Place vapor retarder over subbase immediately prior to placing of floor slab.
   1. At locations indicated on Drawings, Install vapor retarder in accordance with ASTM E1643-11 and manufacturer's printed instructions.
   2. Unroll vapor barrier/retarder with the longest dimension parallel with the

direction of the pour.

3. Lap vapor barrier/retarder over footings or seal to foundation walls.
4. Vapor barrier/retarder shall be continuous over entire floor area and turned up a minimum of 2 inches at perimeter walls and penetrations and sealed with termination bar.
5. Overlap joints 6 inches and seal with manufacturer's tape.
6. Seal all penetrations (including pipes) per manufacturer's instructions.
7. No penetration of the vapor barrier/retarder is allowed except for reinforcing steel, structural members and permanent utilities.
8. Repair damaged areas by cutting patches of vapor barrier/retarder, overlapping damaged area 6 inches and taping all four sides with tape.
9. Vapor barrier/retarder installation shall be approved by the vapor barrier manufacturer prior to concrete placement.

3.2 PLACING OF CONCRETE

A. Concrete Work shall be performed in accordance with ACI-301 except as amended by this Section.

B. Convey concrete from the mixer to place of final deposit by methods which will prevent segregation of aggregate or loss of material. Place concrete at such a rate that concrete is at all times plastic and to insure a practically continuous flow of concrete. Concrete not in place 1-1/2 hours after water has been added at batch plant may be rejected by Architect.

C. Place concrete continuously in layers not deeper than 24 inches. Concrete shall not be placed against concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints.

D. Place concrete as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Do not use vibrators to transport concrete. Do not deposit concrete that has partially hardened or been retempered.

E. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface. Do not disturb slab surfaces prior to beginning finishing operations.

F. Do not place concrete during rain unless adequate protection has been provided.

G. Thoroughly compact concrete by suitable means during the placing, and work around the reinforcement and embedded items into the corners of the forms.

1. Use vibrators to aid in the placement of the concrete, operated by experienced personnel and supplemented by hand-spading, rodding or tamping.
2. Keep at least one spare operating vibrator on the job at all times during the concrete operations.
3. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

H. Self-Consolidation concrete does not require vibration.

I. Set reinforcing dowels connecting new concrete construction to existing with epoxy anchoring adhesive as indicated on Structural Drawings.

3.3 CONSTRUCTION, CONTROL, EXPANSION, AND CONTRACTION JOINTS

A. Preformed Construction Joint for Slabs on Grade: Provide as required to facilitate construction in accordance with reviewed shop drawings. Secure with galvanized steel stakes, 1/8 inch thick by 1-1/8 inches wide with 1/2-inch-deep rib and tapered point. Splice adjoining joints with 24 gage steel, galvanized splice plates.

B. For slabs-on-grade, no concrete pour shall be longer than 100 feet or more than 4,000 square feet in area, unless early entry saw-cutting techniques are utilized for placement of joints in the slab while the concrete is still in a green state and prior to the slab developing expansion/contraction cracking at random location. Provide shear keys as detailed.

C. Isolation Joints in Slabs on Grade: Construct isolation joints in interior slabs using 30

lb. felt. Provide isolation joints at points of contact between slabs on grade and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated. Construct isolation joints on exterior slabs abutting vertical surfaces with 1/2-inch-thick expansion joint material.

D. Control Joints in Slabs-on-Grade: Place expansion and contraction joints where required to ensure that undesirable thermal and shrinkage cracking of slabs is minimized.
   1. See Drawings for locations of expansion and contraction joints in slabs-on-grade and in topping pours.
   2. If drawings do not indicate locations, verify with Architect prior to placement of slabs-on-grade and topping pours.
   3. Preformed Strip: Insert premolded rigid plastic, or metal strip into fresh concrete. Cut groove for strip using 10-foot long straight edge cutting tool. Depths of strip shall be one fourth of slab thickness. Press strip into groove such that top of strip is level with the concrete surface. Pull off removable top section, if any, prior to troweling.
   4. Saw Cut: Contractor may saw cut control joints instead of using preformed strips. Saw cut joints shall be 1/8 inch wide. Saw cut depth should equal 1/3 of slab depth. Cut joints after concrete has hardened sufficiently to prevent raveling; usually 4 to 12 hours after slab has been cast and finished. Use diamond or silicone-carbide blades.
   5. Utilize early entry saw-cutting techniques using specialized equipment and procedures in accordance with the manufacturer of the saw-cutting equipment to saw-cut all joints in interior and exterior slabs within 2 hours of final finishing of the floor slabs while the concrete is still in its early green state.
      a. Acceptable Equipment: Soff-Cut International, Inc., Corona, CA 1-800-776-3328 www.soffcut.com
   6. At exterior slabs-on-grade provide a 1/2 inch wide expansion joint wherever slabs abut vertical construction elements whether indicated or not.

E. Additional reinforcing may be required at some construction, expansion/contraction and control joints, and shall be supplied and installed at no additional cost.

F. Reinforcing shall be continuous through construction joints of reinforced slabs, unless otherwise indicated on Drawings. Placement schedule shall be submitted for approval.

G. Construction Joints in Elevated Slabs and Beams: Construction joints in Elevated Slabs, Beams, Grade Beams, and other flexural members shall only be made as shown in the contract drawings or as approved by the Engineer of Record. Joints shall be constructed in accordance with ACI 318 Section 6.4 with provisions made for the transfer of shear and other forces. Reinforcement shall be continuous through these joints unless noted otherwise.

H. Construction Joints in Walls, Foundations, and Slabs on Grade: Provide keyways at least 1-1/2 inches deep in vertical construction joints in walls and construction joints in slabs on grade and foundations. Discontinue every other horizontal bar through slab on grade construction joints unless noted otherwise.

I. Control Joints in Walls: Create weakened planes in cantilevered retaining walls at 25 feet on center. Use preformed strips, placed vertically, full height in each face of wall. Depth of strips shall be one inch.

J. Provide support of formed construction joint materials by means that does not puncture or otherwise damage under floor vapor retarder at interior floor slabs on grade.

3.4 WATERSTOPS

A. Waterstops: Install waterstops continuous in construction joints and joints between footings and walls and other locations as indicated at all below grade soil bearing concrete construction (recessed slab areas for access flooring, etc.), or where exposed to weather, moisture, or other construction joints that have the potential to allow water infiltration into the building, and other locations as indicated on Drawings.
   1. PVC or Rubber Dumbbell Type Waterstops: Install without displacing

reinforcement. Provide temporary supports as required to retain joint in proper position while concrete is being placed on both side of the joint. Heat seal joints watertight per Manufacturer's specifications.

2. Self-Expanding Waterstop Strips: Install according to Manufacturer's printed instructions. Bond or mechanically fasten as standard per Manufacturer and firmly press into place. Install in longest lengths practicable. Tightly butt adjacent lengths.

3.5 FINISHING VERTICAL (FORMED) SURFACES

A. Formed surface finishes:

1. Pits, tunnels, mechanical rooms and concealed surfaces: Remove fins, patch tie holes.
2. Interior and exterior exposed surfaces: Remove fins, patch tie holes, stone joint marks, out-of-plane surfaces and other projections to produce uniform, smooth, dense concrete having the following formed finish Class and permitted abrupt or gradual irregularities as designated by ACI 347-04:
   a. Vertical and horizontal exterior exposed surfaces: Class A Smooth Finish, 1/8 inch, except abrupt irregularities shall be removed.
   b. Other surfaces prominently exposed to public view: Class A Smooth Finish, 1/8 inch, except abrupt irregularities shall be removed.
   c. Concealed surfaces where covered by another finish: Class C, 1/2 inch, except abrupt irregularities shall be limited to 1/4 inch.

3.6 FINISHING HORIZONTAL SURFACE

A. At tops of foundation walls and grade beams finish with a texture matching adjacent formed surfaces unless otherwise indicated.

B. Flatwork: Rake concrete into place, screed and compact with a light tamp, except do not tamp topping and slabs not on grade. Screed with sawing motion and float surface to bring fines to the top.

C. Mix and apply evaporation retarder in accordance with manufacturer's printed instructions immediately after floating. In extreme drying conditions, apply additional material as needed. Apply lightly on hard to trowel floor areas.

D. When concrete has hardened sufficiently so that excess fines will not be brought to the surface, trowel slab with a steel trowel to a smooth surface free of pinholes and other imperfections. A mechanical trowel with rotating steel blades, approved by Architect, shall be used for this operation.

E. After the surface has hardened sufficiently to ring under a trowel, trowel again with a steel trowel to a hard, burnished surface free of blemishes.

F. Concrete slabs scheduled to receive ceramic tile or similar finishes shall have a screeded finish but true and even to plane with no sharp projections or ridges.

G. Use a small radius edger on edges of exposed Work. Use a deep cutting, scoring tool or sawcutting to provide scoring for control joints as indicated unless otherwise noted or directed.

H. Concrete Flatwork (Slab) Finishes:

1. Interior concrete flatwork to receive smooth steel trowel finish, unless otherwise indicated on Drawings.
2. Interior Decorative Concrete Finishes: As specified in Section 03 35 00.
3. Exterior Flatwork: As follows, unless otherwise indicated on Drawings:
   a. Light to medium broom finish concrete.
   b. Integrally colored concrete with broom finishes as indicated on Drawings or as required to match existing.

I. Finish floors shall meet requirements of ACI 302.1R for a Flat (3/16 in 10'-0") Classification. Floors scheduled to receive thin-set tile applications shall meet Very Flat (1/8 inch in 10'-0") Classification.

3.7 SLABS

A. Saw cut or score contraction joint pattern indicated on Drawings. Use thick blade or scoring tool. Early entry saw shall be used immediately after final finishing and to a depth of 1-1/4 inches. A conventional saw or scoring tool shall cut 1/4 of the depth of slab thickness.

B. Slope to drains to drains as indicated on Drawings, but not less than 1/4 inch per foot nominal across entire room or area to be drained.

3.8 SPECIAL FINISHES

A. General:

1. Obtain cement and aggregates from a single source for specialty concrete finishes to provide uniformity in appearance and color.
2. Place concrete containing the high range water reducing admixture at a maximum slump. Flow or pump concrete into place, screed, strike-off and float. Do not tamp.

B. Integral Colored Concrete

1. Provide cement, aggregate, and pigment as required to produce consistent colors matching approved mock-up using the materials specified.
2. Plant-Mixed Concrete: Schedule delivery of concrete to provide consistent mix times from batching until discharge.
3. Concrete Paving: Schedule placement to minimize exposure to wind and hot sun before curing materials are applied. Avoid placing concrete if rain, snow or frost is forecast within 24 hours. Protect fresh concrete from moisture and freezing.
4. Floors and Paving
   a. Broomed Finish: Do not dampen brooms.
   b. Trowel Finish: Do not over-trowel or start troweling late.
5. Patching Concrete
   a. Fill holes and defects in concrete surface within 48 hours of form removal.
   b. Use the same patching materials and techniques that were approved on mock-up.
   c. Make patches with a stiff mortar made with materials from the same sources as the concrete. Adjust mortar mix proportions so dry patch matches dry adjacent concrete. Add white cement to mortar mix if necessary to lighten it.
6. Curing
   a. Maintain concrete between 65 and 85 F degrees during curing.
   b. Cure concrete using curing compound; apply curing compound in accordance with manufacturer's instructions.
7. Minor variations in appearance of colored concrete, which are similar to natural variations in color and appearance of unpigmented concrete, are acceptable.

C. Decorative Concrete Finishes: As specified in Section 03 35 33.

3.9 REPAIR OF SURFACE DEFECTS

A. Modify or replace concrete not conforming to required lines, detail and elevations. Grind high spots and fill low areas as required to provide finished floor tolerances as required for application of finish floor materials.

B. Repair or replace concrete not properly placed, resulting in excessive honeycombing and other defects. Do not patch, repair or replace exposed architectural concrete except upon express direction of Architect.

C. After forms are removed, fill tie rod holes, correct honeycomb spots, remove fins and clean and finish damaged surfaces. Wipe off excess mortar and rub to match adjoining surfaces.

D. When excessive honeycombing is revealed, remove the defective material immediately after stripping forms to a depth of 3/4 inch to 1 inch. Cut edge of area

perpendicular to surface to avoid feathered edges. Repair using the following method or submit method of repair and patching material to Architect and Structural Engineer for approval.

1. Saturate with water for several inches beyond cutout and brush-in a grout consisting of equal parts Portland cement and sand. Follow immediately with the patching mortar. Leave the patch slightly higher than the surrounding surface. After an hour or two, finish flush with the adjoining surface. Wipe and rub patch to match adjoining surfaces. Keep patches moist for 7 days.
2. Patching mortar shall consist of the same materials and proportions as the original concrete except that the coarse aggregate shall be omitted. When color match is required, adjust mixture to produce a finished color to match the adjoining concrete surfaces.

E. Cracks caused by expansion, shrinkage and the like that occur in natural color concrete up through final acceptance of building shall be carefully repaired by epoxy injection or other method approved by the Architect.

3.10 CURING

A. Protect freshly deposited concrete from premature drying and maintain without drying at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete.

B. Curing Methods: Cure concrete surfaces receiving finish materials, including, but not limited to; cementitious toppings, paint, and flooring, using one of the following two methods immediately after finishing operations. Consideration shall be given to the construction schedule impact and the compatibility of finish materials with the concrete when selecting a method.

1. Keep concrete continuously moist for at least 7 days using polyethylene film, liquid membrane forming curing compound, or other acceptable covering. Interior floor slabs on grade shall be continuously moist cured for a minimum of 7 days in accordance with ACI standards.
2. Liquid curing compounds shall not be acceptable unless it has been demonstrated that curing compound can satisfactorily serve as a base for finish materials or removed, resulting in a satisfactory base for adhesion of finish materials.
3. Where approved for use, apply liquid curing compound in accordance with the Manufacturer's printed instructions.
4. Refer to Structural Drawings for other acceptable curing procedures.

C. Prevent rapid drying of the concrete at the end of the curing period.

D. During the curing period, protect the concrete from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibrations. Protect finished concrete surfaces from damage caused by construction equipment, materials or methods.

3.11 UNDERLAYMENT OR REPAIR TOPPING

A. Apply underlayment or repair topping to correct unsatisfactory floor surface due to undue settlement or failure to meet tolerance requirements.

B. Slab surface preparation and placing procedures shall be approved by the underlayment and/or repair topping manufacturer and Architect prior to start of installation.

C. Installation: Install underlayment and/or repair topping materials in accordance with Manufacturer’s published instructions and recommendations.

3.12 FLOOR SEALER

A. At areas indicated on Drawings, provide 2 coats of sealer.

B. Provide antimicrobial penetrating concrete sealer at all slab and side wall surfaces of recessed slab areas to receive access flooring.

C. Surface must be clean, dry and free of loose dirt, oil, wax, curing and parting

compounds and other foreign matter.

D. Apply each coat in accordance with Manufacturer's printed instructions.

3.13 LIQUID SEALER DENSIFIER

A. Where indicated on Drawings, provide one coat of liquid sealer densifier.

B. Clean and prepare concrete floors to receive liquid sealer densifier in accordance with manufacturer's printed instructions.

C. Concrete slabs to receive liquid sealer densifier shall be properly cured in accordance with recommendations of the liquid sealer densifier manufacturer's recommendations.

D. Application shall be made in strict accordance with manufacturer's printed instructions and just prior to completion of construction.

1. Spray, squeegee or roll-on liquid sealer densifier to clean, dry concrete surface.
2. Scrub liquid into concrete surface with a mechanical scrubber.
3. Keep surface wet with sealer densifier during the application process.
4. When product thickens, but not more than 60 minutes after initial application, squeegee or vacuum surface to remove all excess liquid.

E. Apply each coat in strict accordance with Manufacturer's instructions.

3.14 FIELD QUALITY CONTROL

A. Tests: Inspection and testing of concrete mix will be performed by a testing laboratory in accordance with Section 01 4500.

1. Provide free access to Work and cooperate with appointed firm.
2. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
3. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C 94.
4. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; ASTM C231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
5. Concrete Temperature: ASTM C1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
6. Compression Test Specimen: ASTM C31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
7. Compressive-Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cu. yd. plus additional sets for each 50 cu. yd. more than the first 25 cu. yd. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
8. Take one additional test cylinder during cold weather concreting, and cure on job site under same conditions as concrete it represents.
9. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed. .
10. Concrete which does not meet the compressive strength requirement at 28 days will be rejected and removed from the Project, and disposed of in a legal manner.

B. Calcium chloride test requirements:

1. Two weeks before installation of the ceramic tile, VCT, vinyl, wood, carpet, epoxy flooring and/or other finish flooring systems over the interior concrete slabs, provide calcium chloride test to determine the level of water vapor transmission in the slab.
2. Conduct testing in accordance with ASTM F1869 or ASTM E1907 (quantitative

anhydrous calcium chloride test).

3. Conduct calcium chloride tests after HVAC system has been in continuous use for 36 hours with a minimum ambient temperature of 72 degrees F. Water vapor transmission levels are directly affected by ambient room temperature and readings conducted without a sustained ambient temperature is NOT acceptable.
4. Document test results and provide copy to Architect with a marked up floor finish plan showing test results.
5. Provide a written clarification on status of HVAC system before and during the test and the length of time the ambient air temperature was maintained before the tests.

3.15 PROTECTION

A. Protect finished surfaces from stains or abrasions. Protect surfaces or edges by leaving forms in place or by providing temporary covers. Protect concrete from rain, flowing water, or mechanical injury.

B. Protect floor slabs from the droppings of plaster, paint, dirt, and other marring by covering with polyethylene plastic sheet, or other acceptable floor protection covering, well lapped and sealed.

1. Where concrete slabs are scheduled to be the finished floor surface, or where slab is treated with a special concrete finish serving as the finished floor surface, provide a continuous covering of 1/2 inch particle board, joints tightly butted and cut to sizes tight to wall construction, over entire floor area over polyethylene plastic sheet, or other acceptable floor protection sheeting. Maintain covering (polyethylene and particleboard) in good condition until danger of damage is past.

3.16 CLEANING

A. During the course of the Work and on completion of the Work, remove and dispose of excess materials, equipment and debris away from premises.

END OF SECTION

SECTION 04 01 20
UNIT MASONRY CLEANING

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

A. Performance Requirements: The application of chemical cleaner shall leave the finished surfaces uniform in color and shall not alter the natural texture of the masonry units.

1.2 SUBMITTALS

A. Submit samples and manufacturer's instructions for masonry cleaning chemicals for approval prior to delivering materials to the site or commencing the work in this Section.
   1. Cleaning compound manufacturer shall procure and apply cleaning solutions to samples of the masonry units to be used in the structure which will be reviewed by the Architect for both aesthetics and effectiveness.
   2. Cleaning compound manufacturer's instructions: Submit current method of application for cleaning chemicals stating the actual application rates.

1.3 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Engaged in producing materials with a satisfactory performance record for at least 5 years.
   2. Applicator: Trained, approved and accepted by the cleaning compound manufacturer. Application personnel shall have at least 2 years' experience with the particular materials being applied.

B. Field Samples:
   1. A test area of wall surface from 10 to 20 square feet in size shall be cleaned with the chemical cleaner recommended by the cleaning compound manufacturer for acceptance by the Architect.
   2. Test samples of adjacent non-masonry materials for possible reaction with the diluted cleaning materials. Samples to be available for review by the Architect.

1.4 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Delivery shall be made to the job site in manufacturer's original containers with seals unbroken and labeled with manufacturer's batch number.

B. Storage and Protection:
   1. Store materials in original, unopened containers in compliance with manufacturer's printed instructions.
   2. Do not store in areas where temperature will fall below 20 degrees F. or rise above 100 degrees F.

1.5 PROJECT/SITE CONDITIONS

A. Environmental Requirements: Temperature and relative humidity conditions for a period before, during and after application shall be as recommended by the manufacturer.

PART 2 PRODUCTS

2.1 MATERIALS

A. Chemical Cleaner:
   1. Cleaner shall be a solution of blended liquid acids or acid alternatives, heavily inhibited and emulsified and in combination with special wetting systems.
   2. Specific product selection shall be dependent upon type of masonry,

construction dirt/debris and or staining to be removed/cleaned as recommended by the chemical cleaner manufacturer.

3. Cleaner shall be acceptable to the masonry unit manufacturer.
4. Muriatic acid shall not be acceptable as a chemical cleaner for new masonry.
5. Subject to compliance with specification requirements, Sure-Klean Vana Trol, Sure-Klean No. 600 Detergent, Sure-Klean 101 Lime Solvent, or Enviro-Klean Safety Klean as manufactured by ProSoCo, Inc., www.prosoco.com; or 202V Vana-Stop , 202 New Masonry Detergent, 200 Lime Solve, or 202XX New Masonry Detergent Extra Strong Concrete as manufactured by Diedrich Technologies www.diedrichtechnologies.com are acceptable products.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Prior to start of work, carefully inspect the installed work of other trades, and verify that such work is complete to the point where this work may commence.
2. The chemical cleaner manufacturer's representative shall verify that the chemical cleaner may be applied in accordance with the manufacturer's recommended methods.
   a. Verify that chemical cleaning agent is acceptable to both the concrete masonry unit manufacturer and the mortar manufacturer.
3. In the event of discrepancy, immediately notify the Architect.
4. Commencement of system application constitutes acceptance of surfaces by applicator.

3.2 PREPARATION

A. Protection:

1. Use all means necessary to protect the installed work of other trades.
2. Concrete sidewalks shall be protected from runoff by soaking with water immediately prior to application on adjacent walls.
3. Adjoining glass, metal and painted surfaces shall be protected from overspray and splash of chemical cleaner. Inadvertent splashes shall be removed in an approved manner before the solution has damaged the surface.
4. In the event of damage, immediately make all repairs and replacements necessary to the approval of Architect and at no additional cost to Owner.

B. Surface Preparation for Chemical Cleaner:

1. In strict accordance with manufacturer's printed instructions.
   a. Masonry walls shall be cleaned within 14 to 28 days after installation.
   b. Walls shall be free of excess mortar.
   c. Cracks, other than hairline cracks, shall be pointed up.
   d. Defective mortar joints shall be routed out, pointed with mortar and tooled.
2. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

C. Presoaking Hoses:

1. Adequate water supply shall be made available to assure thorough pre-soaking and thorough rinsing of the wall before undertaking general cleaning.
2. Two water hoses shall be used by the cleaning crew.
3. One hose shall be attached to a length of lawn soaker hose placed along the top of the wall to provide a uniform and complete saturation of the entire wall area.
4. The second hose shall provide a copious flow of water for thorough flushing of excess mortar and dirt from the scrubbed areas.
5. The lawn soaker hose is later to be placed at the face of the scaffold or stage to provide a continuous spray of wall areas below the working area.

3.3 APPLICATION

A. Chemical Cleaner: Application to be in strict accordance with manufacturer's printed instructions and as follows:

1. Surfaces shall be thoroughly pre-soaked with clean water to prevent the absorption of the cleaning solution within the pores of the masonry.
2. Cleaning solution shall be diluted with clear water and applied to pre-soaked wall areas with a long handled stiff fibered masonry wall washing brush, or other brush as recommended by the cleaning compound manufacturer. The cleaning solution may also be applied with a garden-type low pressure sprayer having a maximum nozzle pressure of 50 psi (3.5kg/cm^2). Allow the solution to remain on the wall 5 to 10 minutes, or as recommended by the cleaning solution manufacturer. Wooden paddles or other non-metallic tools may be used to remove stubborn particles. Cleaning shall be restricted to small areas of up to 20 square feet at a time.
3. After washing a given area, the wall shall be flushed with a copious amount of clear water, working from top to bottom, before the solution dries on the wall surface. All of the cleaning solution shall be completely rinsed off of the wall.
4. Rinsing water may be applied with a high-pressure hose system with a maximum nozzle pressure of 700 psi . The high-pressure nozzle tips shall have a fan spray angle of from 15 to 45 degrees. The high-pressure system shall have a water flow rate of 3 to 8 gallons per minute. Care shall be taken to avoid damaging the brick unit or the mortar joints with the high-pressure water spray.
5. Repeat the procedure on spots which require additional cleaning.
6. Clean roof side and top of parapet walls.

END OF SECTION

SECTION 04 05 16
MORTAR AND MASONRY GROUT

PART 1 GENERAL

1.1 SUMMARY
- A. Section Includes: Mortar and masonry grout used in concrete unit masonry construction as shown on Drawings and as specified.
- B. Related Sections:
  1. Section 04 05 19 – Masonry Reinforcement
  2. Section 04 22 00 – Concrete Unit Masonry

1.2 SUBMITTALS
- A. Mix Designs:
  1. Submit mix designs and samples to the Architect for review prior to delivering materials to the site or commencing the Work.
     a. Mortar Mix Design: Furnish in accordance with ASTM C270.
     b. Grout Mix Design: Furnished by either the grout supplier or an independent testing laboratory. Submit comprehensive strength data with mix design submittals when pozzolans are used.
  2. Submit written colored mortar proportions for each color of mortar to be supplied for review by the Architect.
- B. Samples: Submit mortar channels for color selection.
- C. Product Data: If alternative mortar materials are to be provided, submit current instructions stating the actual quantities and mixing instructions for alternative mortar materials to conform to specified requirements.
  1. Submit test report data substantiating compliance with specified performance requirements.
  2. Submit current ICC Evaluation Report.

1.3 DELIVERY, STORAGE, AND HANDLING
- A. Storage and Protection: Cementitious materials shall be stored off the ground, under cover and shall be kept dry.
- B. Preblended Mortar Mix Delivery System: The use of dry preblended mortar silos and bulk bags shall be acceptable. Bulk bags and silos shall be sealed to prohibit contamination of the ingredients and to keep the materials dry until mixed.

1.4 PROJECT/SITE CONDITIONS
- A. Environmental Requirements:
  1. Hot Weather Requirements: Wet mortar board before loading and cover mortar to retard drying when not being used.
  2. Cold Weather Requirements: In accordance with "Recommended Practices and Guide Specifications for Cold Weather Masonry Construction" by IMIAC; provide adequate equipment for heating the mortar and grout materials, when air temperature is below 40 degrees F. Temperatures of the separate materials, including water, shall not exceed 140 degrees F. when placed in the mixer. When air temperature is below 32 degrees F., maintain mortar temperature on boards above freezing.

PART 2 PRODUCTS

2.1 MATERIALS

A. Mortar:

1. Cement: Type II Portland cement conforming to ASTM C150. Provide Type V cement where CMU walls will be exposed to soil (if any).
2. Aggregate: Clean, sharp and well graded and free from injurious amounts of dust, lumps, shale, alkali, surface coatings and organic matter, conforming to ASTM C144, except that no less than 3 percent nor more than 10 percent shall pass a No. 100 sieve.
3. Hydrated Lime: ASTM C207, Type S or N.
4. Water: Clean and potable.
5. Admixtures:
   a. Chemical: The use of accelerator admixtures, water reducing plasticizers and other chemical admixtures shall not be allowed.
   b. Alternative Plasticizer: Pozzolanic formulation consisting of a combination of hydroxy aluminum silicates and diatomite:
      1) Alternative Plasticizer Manufacturer: Engaged in producing materials with a satisfactory performance record for at least 5 years.
      2) Mortar mix design shall be in accordance with ICC Evaluation Report, in accordance with the mortar type specified elsewhere in this specification.
      3) Provide alternative plasticizer in accordance with manufacturer's printed instructions, including specific mixing instruction.
      4) No other admixtures shall be used in conjunction with the alternative plasticizer unless approved in writing by the alternative plasticizer manufacturer.
      5) Packing and Shipping: Mortar admixture(s) shall be delivered to the job site in manufacturer's original containers with seals unbroken and labeled with manufacturer's batch number.
6. Mortar Color:
   a. Color shall match color of masonry unit(s), as selected and approved by Architect.
   b. Provide lime proof, inorganic compounds which shall not exceed 15% by weight of the cement, unless otherwise directed by Manufacturer.
   c. Carbon black shall not exceed 3% by weight of the cement.
   d. Factory blend color for full color saturation of mortar joint and factory package for unitized jobsite mixing at a ratio of one unit of color per sack of cementitious material, (portland cement, lime, or masonry cement).

B. Grout:

1. Cement: Type II Portland cement conforming to ASTM C150.
2. Aggregate: ASTM C404 and as follows:
   a. Sand: Size No. 1 for fine aggregate.
   b. Pea Gravel: Size No. 8 for coarse aggregate.
3. Water: Clean and potable.

2.2 MIXES

A. Mortar: ASTM C 270, Type S or N.

1. Measurement: Accurately measure materials by ASTM C270 by the Property Method per Table 2.
2. Mix cementitious materials and aggregates 3 to 5 minutes in a mechanical mixer. Small amounts of mortar may be mixed by hand. Adjust consistency of the mortar depending on the absorptive quality of the units being laid, and to the satisfaction of the mason.

3. If mortar begins to stiffen, it may be retempered by adding water within a basin formed by the mortar, and remixing.
4. Use within 2-1/2 hours of initial mixing and no mortar shall be used after it has begun to set or after it has become harsh or non-plastic.
5. Mix color in a specific and exacting ratio in accordance with the Architect's reviewed submittals.
6. Water-Repellent Admixture: In accordance with Section 04 05 26.
7. Preblended Mortar Mix: Provide mortar as specified herein, except that dry ingredients may be preblended and bulk packaged for delivery to a jobsite silo (which loads into batch mixer) or bagged for hand loading into mixer. Moisture shall be extracted from sands. Digital printouts displaying the proportions of each batch shall be submitted to the Architect upon request. Mixing shall be accomplished by mechanical mixer in accordance with instructions provided by Preblended Mortar Mix Distributor.

B. Grout:
1. Job-Site Mixed: In accordance with ASTM C476.
2. Transit-Mixed:
a. Designed by the supplier or an independent testing laboratory with a minimum compressive strength of 2000 psi (140mPa) in 28 days unless higher strength is required by the Structural Drawings and Notes.
b. Slump: As indicated on Structural Drawings.
c. Use within 1-1/2 hours of initial mixing and use no grout after it has begun to set or after it has become harsh or non-plastic.
d. Course grout may be used in cavity walls with a horizontal dimension of 2 inches or more, and in hollow cell construction 4 inches or more in both horizontal directions.

PART 3 EXECUTION

3.1 INSTALLATION
A. Installation of mortar and grout shall be as specified under each of the following Sections and in accordance with AMG Standard 108:
1. Section 04 22 00 – Concrete Unit Masonry
B. Colored Mortar: Consistency of appearance shall be maintained throughout the Project.
C. Temperature: Mortar and grout shall have a temperature between 50 degrees F. and 90 degrees F. while being used.
D. Grout may be poured by hand bucket, concrete hopper or through a grout pump. Grout spaces shall not be wet down prior to pouring grout.

3.2 FIELD QUALITY CONTROL
A. General: Tests and inspections as necessary to verify quality and strength of mortar and grout. Laboratory tests shall conform to applicable ASTM standards and tests.
B. Tests:
1. Frequency: As determined by the Architect based upon total time for construction of masonry with not less than two tests per each level of masonry construction, foundation to roof or floors.
2. Testing Laboratory: Inspection and testing of mortar and grout will be performed by a testing laboratory in accordance with Section 01 45 00. The testing laboratory, in addition to meeting requirements of ASTM E329, must be an approved laboratory competent to perform cement physical testing.
3. Distribution of Results of Tests: Within 24 hours of results of tests, copies of the results shall be submitted to the Architect, Contractor, masonry contractor, and the grout supplier if applicable.
C. Mortar:
1. Property Specification (ASTM C270): Testing in accordance with ASTM C 780.

2. For determining hardened mortar properties, prepare 3 test specimens for each test age and property. A strength test shall be the average of the strengths of the specimens tested at the age specified. Specimens shall be tested at 7 and 28 days.

D. Grout:
1. Testing per ASTM C1019.
2. Three test specimens shall constitute one sample. A strength test shall be the average of the strengths of the specimen tested at the age specified.
3. Specimens shall be tested at 7 and 28 days.
4. The compression strength will be considered satisfactory if the average of three consecutive tests of the grout is equal to or greater than the specified strength and no individual strength test falls below the specified strength by more than 500 psi.

3.3 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris awayfrom premises.

END OF SECTION

SECTION 04 05 19
MASONRY REINFORCEMENT

PART 1 GENERAL

1.1 SCOPE

A. Furnish all labor, materials, equipment, and services necessary for the installation of all masonry reinforcement. Products furnished but not installed under this section:
   1. Wire reinforcement in mortar joints.
   2. Combination veneer ties and wire reinforcement in mortar joints.
   3. Vertical and bond beam reinforcement.

B. Related work in other areas:
   1. Cast-in-Place Concrete – Section 033000.
   2. Mortar and Grout – Section 040516.
   3. Masonry Accessories – Section 040523.
   4. Reinforcement Unit Masonry – Section 042200.

1.2 REFERENCES

A. American Concrete Institute (ACI):
   1. ACI 117 – Standard Specifications for Concrete Construction and Materials.
   2. ACI 315R – Manual of Standard Practice for Detailing Reinforced Concrete Structures.
   3. ACI 531 – Concrete Masonry Structures – Design and Construction.

B. American Welding Society (AWS): AWS D1.4 – Structural Welding Code – Reinforcing Steel.

C. ASTM A82 – Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

D. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

E. ASTM A615 – Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

F. ASTM A641 – Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

G. International Building Code (IBC), latest adopted edition, Chapter 21.

1.3 SUBMITTALS

A. Provide copies indicating shop and erection details, including dimensions, materials, finishes, splices and attachments, typical details, and manufacturer's installation recommendations.

B. Certification: Provide test reports or calculations signed by a registered engineer or architect indicating that the products proposed can meet or exceed the performance requirements.

C. Test Data: Submit copies of the manufacturer’s current test data to verify compliance with the International Building Code.

1.4 DELIVERY, HANDLING AND STORAGE

A. Deliver reinforcement to the project site bundled, tagged and marked to facilitate sorting and placing. Tags shall indicate bar size, lengths, grade and other information corresponding to the markings shown on the placement diagrams.

B. Store reinforcing at the site off the ground and in a manner to prevent damage to the materials.

PART 2 PRODUCTS

2.1 MATERIALS

A. Steel Wire and Rods: ASTM A82, diameter as specified for prefabricated reinforcing.

B. Galvanized Finish: ASTM A641, mill galvanized (min. 0.1 oz. per sq. ft.) for interior walls; ASTM A153, Class B-2, hot-dip galvanized for exterior walls.
C. Vertical and Bond Beam Reinforcing: In accordance with Section 03200 and the Contract Drawings.
D. Tie Wire (Vertical and Bond Beam Reinforcing): Annealed steel wire, cold drawn, minimum 18-gauge per ASTM A82. Tie wire used as structural component shall be minimum of 9-gauge unless indicated otherwise.
E. Welding Rods: AWS D12.1, D1.1 and A5.1, E70XX electrodes per CRSI, unless noted otherwise.
F. Rebar Positioners: 9-gauge wire, ASTM A153, hot-dip galvanized after fabrication.

2.2 FABRICATION
A. Joint reinforcing: Truss or ladder type (as applicable), galvanized steel wires with width 2" less than wall thickness conforming to the International Building Code.
1. Provide designs which allow tie of facing wall to back-up wall, using adjustable 2-piece anchors.
B. Vertical and Bond Beam Reinforcing: In accordance with ACI 117, shop fabricated bars shall conform to the required shapes and dimensions with fabrication tolerances complying with ACI 315. In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.

2.3 ACCESSORIES
A. Rebar Positioners: 10-gauge or heavier, double loop wire, or 18-gauge stamped sheet metal designed to anchor in mortar joints and position in the center of the wall cavity.
B. Dowels: 1/4" diameter reinforcing bars without deformation or sleeved with heavy paper on one side of the expansion joint, if deformed.

PART 3 EXECUTION

3.1 INSPECTION OF SURFACES
A. Examine surfaces for defects that will adversely affect the work, and for deviation beyond allowable tolerances.
B. Start of work shall mean acceptance of interfacing surfaces as capable of producing an acceptable job.

3.2 INSTALLATION
A. Installation of masonry reinforcing shall be as specified under Section 042200.
B. Tie Wire: Turn ends of tie wire away from the exposed masonry surfaces.
C. Welding shall be performed by certified welders.

END OF SECTION

SECTION 04 05 23
MASONRY ACCESSORIES

PART 1 GENERAL

1.1 SCOPE

A. Products furnished but not installed under this section: ties, anchors, control joints, through wall flashing, and weep holes.

B. Related work in other areas.

1. Mortar and Grout – Section 040516.
2. Masonry Reinforcement – Section 040519.
3. Concrete Unit Masonry – Section 042200.

1.2 REFERENCES

A. ASTM A36 – Standard Specification for Carbon Structural Steel.

B. ASTM A82 – Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

C. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

D. ASTM A568 – Standard Specification for Steel, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled Sheet and Cold-Rolled, General Requirements for.

E. ASTM A641 – Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

F. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized), or Zinc-Iron Alloy Coated (Galvanized) by the Hot-Dip Process.

G. ASTM B370 – Standard Specification for Copper Sheet and Strip for Building Construction.

H. ASTM D746 – Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.

I. ASTM D1056 – Standard Specification for Flexible Cellular Materials – Sponge or Expandable Rubber.

J. ASTM D2240 – Standard Test Method for Rubber Property-Durometer Hardness.

K. ASTM D2287 – Standard Specification for Non-Rigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds.

1.3 SUBMITTALS

A. Provide copies indicating shop and erection details, including dimensions, materials, finishes, splices and attachments, typical details, and manufacturer's installation recommendations.

1.4 DELIVERY, HANDLING AND STORAGE

A. Store accessories at the site off the ground and in a manner to prevent damage to the materials.

PART 2 PRODUCTS

2.1 MATERIALS

A. Steel Wire: ASTM A82, diameter as specified for accessory.

B. Galvanized Finish: ASTM A641, mill galvanized for interior walls; ASTM A153, Class B-2, hot-dip galvanized for exterior walls.

C. Flat and Corrugated Sheet Steel: ASTM A446 or ASTM A568.

D. Bar Anchor Material: ASTM A36.

2.2 ACCESSORIES

A. Anchors and ties shall be steel with zinc coated finish or shall be of other non-corrosive metal.

B. Sheet Metal Ties: 22-gauge corrosion resistant corrugated sheet metal, not less than 7/8” wide by 7” long, pre-punched for wire ties to horizontal steel.

C. Metal Lath Ties: 3.4 lb. copper-bearing expanded plaster lath.

D. Dovetail Anchors: 16-gauge flat sheet steel, 1” wide, 5-1/2” length, designed for use with embedded slot or inserts.

E. Bar Anchors: Machine made corrosion protected metal with a cross section area not less than 0.25 sq. in. with ends turned up 2”, not less than 16” long for 8” walls, nor less than 24” long for 12” walls.

F. Control Joints: Polyvinyl Chloride (PVC) per ASTM D2287, Type PVC 654-4 with a durometer hardness of 85 (+/- 5) when tested per ASTM D2240, minimum tensile strength of 1750 with minimum 300% elongation per ASTM D638, and cold crack brittleness of 10° C, per ASTM D746. Sizes and profiles as indicated on the drawings.

G. Joint Filler: Closed cell neoprene rubber conforming to ASTM D1056, Class RE41, oversized 50%, self-expanding, 2-3/4” or 3” width by maximum lengths.

H. Through-Wall Flashing, Copper/Kraft Paper Flashing: 2 oz. per sq. ft. copper meeting ASTM B370 bonded to a layer of fiber reinforced asphalt and backed with Kraft paper.

I. Weep Holes: Round plastic tubing (3/8” dia. X 4”) or pre-manufactured weeps.

PART 3 EXECUTION

3.1 INSPECTION OF SURFACES

A. Examine surfaces for defects that will adversely affect the work, and for deviation beyond allowable tolerances.

B. Start of work shall mean acceptance of interfacing surfaces as capable of producing an acceptable job.

3.2 INSTALLATION

A. Installation of masonry reinforcing shall be as specified under Sections 040519 and 042200.

B. Provide control joints as indicated on the drawings and in accordance with the requirements of Section 042200.

C. Provide through-wall flashing as indicated on the drawings and in accordance with the requirements of Section 042200.

D. Provide weep holes as indicated on the drawings and in accordance with the requirements of Section 042200.

END OF SECTION

SECTION 04 05 26
CMU INTEGRAL WATER REPELLENT

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

A. Performance Requirements: Water repellent admixture shall be provided in both the masonry units and mortar used in all above grade exterior CMU wall construction, including parapets, and shall constitute a complete integral water repellent system for exterior above grade walls meeting the following requirements:

1. Admixture shall leave the finished surfaces water repellent and shall not alter the natural texture or color of the masonry units.
2. Admixture shall provide wind driven rain resistance equivalent to Class E Rating as measured by ASTM E514-74.
3. Bond strength as determined by ASTM E72 shall not be reduced by the use of the water repellent admixture.

1.2 SUBMITTALS

A. Integrally Water Repellent Concrete Masonry Unit Samples: Unit manufacturer shall submit 3 samples of the masonry units to be used in the structure which will be reviewed by the Architect for both aesthetics and effectiveness.

B. Product Data: Indicate methods of fabrication and installation for the following materials:

1. Submit current instructions stating the actual quantities of water repellent material required to meet the guaranteed requirements.
2. Submit test report data substantiating compliance with specified performance requirements.
3. Detail Drawings (Water Repellent Units): Submit manufacturer's flashing and weep hole diagrams.

C. Submit warranties for integral water repellent concrete masonry wall system as specified herein and in accordance with Section 01 77 00.

D. Unit manufacturer shall submit copy of current Certificate of Qualification issued by water repellent manufacturer.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Water Repellent Manufacturer: Engaged in producing materials with a satisfactory performance record for at least 5 years.
2. Masonry Unit Fabricator/Manufacturer: Trained, approved and accepted by the manufacturer.

B. Mock-Ups: In accordance with Section 04 22 00 and as follows:

1. Admixture shall be used in materials used to construct the masonry sample wall mock-up located at the job site.
2. The purpose of this sample will be to observe color uniformity and intensity in the mortar, methods used to incorporate admixture into mortar, and workmanship techniques.

C. Regulatory Requirements: Use of water repellent admixtures shall be in strict accordance with applicable Federal, State and local requirements, including, but not limited to, environmental regulations.

1.4 DELIVERY, STORAGE AND HANDLING

A. Mortar admixture shall be delivered to the job site in manufacturer's original unopened containers and packaging, with labels clearly identifying product name, manufacturer, and batch number.

B. Store admixture in clean, dry area indoors in accordance with manufacturer’s instructions; keep containers sealed until ready for use, keep from freezing, do not use

admixture once frozen.

C. Protect admixture during handling to prevent damage or contamination.

1.5 WARRANTY

A. Water Repellent Manufacturer: Water-repellent shall be warranted by Admixture manufacturer to be free of defects and to meet manufacturer's published physical and chemical properties.

B. CMU producer shall warrant that Integral Polymeric CMU Water-repellent has been provided at appropriate dosage rate in all units shipped to this project for use in exterior walls.

C. Masonry Installer shall warrant that only CMUs and mortar containing Integral Polymeric CMU Water-repellent have been placed in exterior walls and that admixture was included in the mortar mix in accordance with water repellent manufacturer's printed instructions.

PART 2 PRODUCTS

2.1 MATERIALS

A. Water-Repellent Admixture: The following shall be included in exterior masonry units.

1. Liquid polymeric admixture(s) formulated for mixing with mortar mix and formulated for mixing with concrete during production of concrete masonry units to cross link and provide resistance to water penetration to achieve a Class E Rating when tested in accordance with ASTM E514.
2. Admixture shall not reduce flexural and compressive strength of mortar when tested in accordance with ASTM C1072 and C780.
3. Concrete Masonry Unit Manufacturer: Acceptable to integral water repellent manufacturer and qualified by integral water repellent manufacturer to comply with ASTM E514 for water permeance testing.
4. Acceptable Products include the following:
   a. Dry Block Mortar Admixture as manufactured by W.R. Grace & Co. - Conn., Cambridge, MA (800) 558-7066. www.grace.com
   b. Eucon Blocktite Mortar Admixture as manufactured by The Euclid Chemical Company, Cleveland, Ohio (800) 321-7628 www.euclidchemical.com
   c. RainBloc admixture as manufactured by ACM Chemistries, Inc. www.acmchem.com

PART 3 EXECUTION

3.1 ERECTION, INSTALLATION, APPLICATION

A. In accordance with Sections 04 05 16 and 04 22 00 and manufacturers recommendations.

END OF SECTION

SECTION 04 22 00
CONCRETE UNIT MASONRY

PART 1 GENERAL

1.1 SUMMARY
- A. Section includes construction of reinforced hollow core CMU including setting materials and accessories.

1.2 SUBMITTALS
- A. Samples: Submit samples to Architect for review prior to delivering materials to Site or commencing Work in this Section.
  1. Provide 2 samples of each type and weight classification of concrete masonry units, (stretcher units), to be used on Project showing range of texture and/or color variations of exposed surfaces for units.
  2. Units provided to Project shall match these samples.
- B. Shop Drawings: Submit Shop Drawings showing proposed location of control joints and obtain approval of same from Architect and Structural Engineer prior to construction.
- C. Test Reports: Test results shall clearly indicate:
  1. Types of materials and composition, including integral water repellent for units exposed to the exterior.
  2. Classification of concrete masonry unit in accordance with ASTM C90 requirements.

1.3 QUALITY ASSURANCE
- A. Standards: Comply with the requirements of ACI 530.1/ASCE 6 "Specifications for Masonry Structures", except as otherwise indicated.
- B. Regulatory Requirements: Masonry materials and workmanship shall meet requirements of IBC 2018, Section 2104.

1.4 DELIVERY, STORAGE AND HANDLING
- A. Transport and handle masonry units in such a manner as to prevent chipping and breakage.
- B. Deliver and store materials in dry, protected areas.
- C. Keep free of stain or other damage.
- D. Locate storage piles, pallets, stacks or bins to avoid or protect material from heavy or unnecessary traffic.
- E. Segregate storage piles, pallets, stacks or bins of fire-rated units from non-rated units and maintain clear identification of the rating of the units.
- F. Replace damaged material at no cost to Owner.

1.5 PROJECT/SITE CONDITIONS
- A. Hot Weather Requirements:
  1. When ambient air temperature exceeds 100 degrees F., or when ambient air temperature exceeds 90 degrees F. and wind velocity is greater than 8 mph, Masonry Contractor shall implement hot weather protection procedures as submitted to Architect.
  2. Do not spread mortar beds more than 4 feet ahead of placing block units.
  3. Place block units within one minute of spreading mortar.
- B. Cold Weather Requirements:
  1. Fully protect concrete masonry units against freezing by a weather-tight covering which shall also prevent accumulation of ice.
  2. Do not lay concrete masonry units when temperature of surrounding atmosphere is below 40 degrees F. or is likely to fall below 40 degrees F. in the

24 hour period after laying, unless adequate protection is provided.

1.5 SCHEDULING AND SEQUENCING

A. Coordination: Coordinate with other Trades whose Work relates to concrete masonry unit installation for placing required blocking, backing, furring, conduits and other items.

PART 2 PRODUCTS

2.1 MATERIALS

A. General Requirements for Concrete Masonry Units:

1. Concrete masonry units shall meet ASTM C90 requirements except that when CMU will be exposed in final construction, ASTM C90-00, paragraph 7.2.1 shall be modified to read: "Three percent of a shipment containing chips not larger than 1/2 inch in any dimension, or cracks not wider than 0.02 in. and not longer than 10 percent of the nominal height of the unit is permitted." Linear shrinkage of units of units shall not exceed 0.065 percent.
2. Units shall be in the same condition in wall as they were upon delivery.
3. Unit sizes shall be 8 by 8 by 16 inches, 12 x 8 x 16 inches, or as otherwise indicated on Drawings.
4. Texture and color shall be consistent for all units provided for exposed walls. Range of texture and color shall be within that shown by samples reviewed by Architect.
5. Surface of units shall be clean and free from dirt when laid in walls.
6. Units not complying with the appropriate ASTM Standards shall not be laid in the wall where exposed to view.
7. Provide special block sizes and shapes required or as shown on Drawings.
8. Water-Repellent Admixture: In accordance with Section 04 05 26. Concrete masonry units exposed to the exterior shall contain the recommended amount of integral water repellent admixture, as per manufacturer's certification program.

B. Hollow CMU Classifications: The following requirements shall apply to all shapes, colors, textures, and sizes of CMU provided.

1. Medium weight units: Weighing 105 lbs. per cubic foot to less than 125 lbs. per cubic foot and manufactured from a combination of volcanic scoria aggregate conforming to ASTM C331 and sand conforming to ASTM C33.
2. Normal weight units: Weighing 125 lbs. per cubic foot or more and manufactured with sand conforming to ASTM C33.
3. Fire-resistant Rated Lightweight Units:
   a. Provide units manufactured and certified to comply with UL 618 – Standards of Concrete Masonry Units for the fire-resistance rating required.
   b. Weighing less than 105 lbs per cubic foot and manufactured with sand and gravel, cinders, blast furnace slag, expanded clay or shale, pumice, or other proprietary aggregates complying with ASTM C331

C. Standard Smooth Faced CMU: Manufacturer's standard smooth faced units.

D. Decorative Faced CMU:

1. Decorative face type/texture as indicated on Drawings or as selected by Architect.
2. Furnish units with decorative face on 1, 2 or 3 faces as required by the design.
3. 8"x8"x16" standard hollow load bearing units for foundation stem walls
4. 4"x8"x16" integral color split face hollow core block, color to be determined by the Owner
5. 8"x8"x16" integral color vertical score block, color to be determined by the Owner
6. 2"x8"x16" integral color cap block, color to be determined by the Owner

E. Accessory Units: Provide units as required for window sills and jambs, doors, control

joints, bond beams, lintels, pilaster, caps and other locations as indicated on Drawings with a minimum of block cutting. Accessory units shall match adjacent unit color and texture unless noted otherwise.

2.2 ACCESSORIES

A. Joint Reinforcing: Joint reinforcing in accordance with requirements of IBC 2012, Chapter 21.

B. Reinforcing Steel: As specified under Section 04 05 19.

C. Control Joints:

1. Rubber: Extruded, solid section, ASTM D2000 2AA-805 with a durometer hardness of 70 or 80 when tested per ASTM D2240.
2. Polyvinyl Chloride (PVC): ASTM D2287, Type PVC 654-4 with a durometer hardness of 85 (+5) when tested per ASTM D2240, minimum tensile strength of 1750 psi with minimum 300 percent elongation per ASTM D638, and cold crack brittleness of 50 degrees F per ASTM D746.
3. Sizes and Profiles: As indicated on Drawings.

D. Mortar and Grout: As specified under Section 04 05 15.

E. Steel Lintels: As indicated or scheduled on Structural Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Installer shall examine supporting structure and conditions under which unit masonry is to be installed, and notify Contractor, in writing, conditions detrimental to proper and timely completion of Work. Do not proceed with the installation of unit masonry Work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

B. Do not use units with chips, cracks, or other defects which might be visible in the finished Work unless otherwise acceptable to the Architect.

C. Do not build on frozen Work; remove and replace unit masonry Work damaged by frost or freezing.

D. Do not use frozen materials or materials mixed or coated with ice or frost. Do not lower freezing point of mortar by use of admixtures or anti-freeze agents, and do not use calcium chloride in mortar or grout.

3.2 PREPARATION

A. Protection: Protect sills, ledges, offsets and other projections from dropping of mortar and grout.

3.3 ERECTION, INSTALLATION, APPLICATION

A. General Requirements for Concrete Masonry Walls: Construction shall comply with IBC 2018, Section 2014, referenced standards, and the following:

1. Workmanship: Concrete masonry units which will be exposed in the finished work shall be treated as an architectural finish and shall be handled carefully to ensure that chippages do not occur during handling and laying. Handling shall be minimized on the jobsite to eliminate chances for chippage.
2. Lay units in uniform and true courses, level and plumb to height indicated on Drawings.
3. Lay concrete unit masonry in such a way that cracks are not formed at time unit is placed in wall.
4. Units shall not be wetted before being used and shall be laid dry.
5. Adjusting Units:
   a. Units shall be adjusted to be level, plumb and straightened into final position in wall while mortar is still soft and plastic enough to ensure a good bond.
   b. Avoid over-plumbing and pounding of corners and jambs to fit

stretcher units after they are set in position.

c. If position of unit is shifted after mortar has stiffened, or bond is broken or cracks are formed, re-lay unit in new mortar.

6. Bearings on Walls: Provide 3 courses of solid units or grouted hollow masonry units below steel bearing plates or beams bearing on walls. Extend bearings each side of contact with load as required to properly transfer loads into wall.
7. Openings: Provide openings in masonry walls where required or indicated. Steel lintels shall be provided unless otherwise noted.
8. Cutting of masonry: When required, exposed block units shall be cut with a power driven Carborundum or diamond disc blade saw. When using "wet" cutting methods, clean water shall be used on exposed units.
9. Anchor masonry units facing against or abutting concrete members to concrete by use of dovetailed flat bar anchors inserted in slots built into concrete.
   a. Space anchors not more than 16 inches vertically and 24 inches horizontally.
   b. Maintain a space not less than 1/2 inch width between masonry and concrete members, keeping space free of mortar or other rigid materials so as to permit differential movement.

B. Bonding:
1. Bond pattern shall be regular running bond unless indicated otherwise on the drawings.
2. Bond shall be plumb throughout face of wall.

C. Bearing Wall Intersections:
1. Intersecting block bearing walls shall not be tied together in a masonry bond, except at corners.
2. One wall shall terminate at face of other wall with a control joint at intersection.
3. Tie intersecting wall together with a metal tie bar, 1/4 inch x 1-1/4 inches x 2'-4" long with a 2 inch right angle bend at each end of bar, spaced vertically at 2 feet on center.
4. Bends at ends of tie bars shall be embedded in grouted cells.
5. Rake out vertical joint between intersecting walls to a depth of 3/4 inch after mortar has stiffened.
6. Provide sealing of control joint as specified in Section 07 92 00.

D. Non-Bearing Wall Intersections:
1. Tie non-bearing wall together with strips of metal lath or galvanized 1/4 inch mesh hardware cloth placed across joint between 2 walls placed in alternate horizontal block courses.
2. Rake out vertical joint between intersecting walls to a depth of 3/4 inch after mortar has stiffened.
3. Provide sealing of control joint as specified in Section 07 92 00.

E. Joining of Work:
1. Where fresh masonry joins partially set masonry the exposed surface of the set masonry shall be cleaned and lightly wetted so as to obtain the best possible bond.
2. Remove loose concrete block and mortar.
3. Stop-off a horizontal run of masonry by racking back 1/2 brick length in each course and, if grout is used, stopping the grout 4 inches back of the rack.
4. Toothing will not be permitted, except upon written approval of the Architect.

F. Mortar Joints:
1. Joints shall be straight, clean and a uniform 3/8 inch thickness on exposed wall face and in accordance with NCMA TEK 19-2A.
2. Exposed vertical and horizontal joints shall be tooled when mortar is “thumbprint” hard with round or other approved jointer, slightly larger than the width of the joints to produce a dense, slightly concave tooled surface which is well bonded to block at edges.

3. Joints shall be tooled flush at:
   a. Below grade and planter surfaces to receive waterproofing.
   b. Interior or exterior surfaces to receive ceramic or stone tile, adhered veneer, stucco or EIFS, wall panels, plaster or other finishes requiring flush joints that are to be concealed.
4. Solidly fill joints from face of unit to depth of face shell, except where specified otherwise.
5. Full bedding to be provided for first course on foundation and wherever maximum strength is required.
6. Butter vertical head joints well and shove these joints tight so that mortar bonds well to both units.
7. Full coverage to be provided on bed of face shells and webs surrounding cells to be filled.
8. Bee-holes or other open joints shall be filled and tooled with mortar while mortar is still fresh.

G. Control Joints:
1. Provide control joints, as detailed, at vertical masonry walls where such walls exceed 40 feet in length. In long length of walls, provide joints at approximately 24 feet on center or as detailed.
2. Control joints shall be continuous full height of walls.
3. At bond beams, control joints shall separate both block and grout; however, steel reinforcing shall be continuous.
4. Horizontal wire reinforcing shall not run through control joint.
5. Control joints shall not occur at wall corners, intersections, ends, within 24 inches of concentrated points of bearing or jambs or over openings unless specifically indicated on Structural Drawings.
6. Control joint materials shall be held back from finished surface as required to allow for sealant and back-up materials.

H. Horizontal Joint Reinforcing:
1. Place horizontal joint reinforcing every 16 inches vertically throughout wall construction.
2. Continuously reinforce first bed joint immediately above and below openings. Provide reinforcing in second bed joint above and below openings which extends 2 feet beyond each side of opening.
3. Lap splices in reinforcing in accordance with Structural Drawings.
4. Cut and bend reinforcing at corners.

I. Vertical Reinforcing and Bond Beam Reinforcing:
1. Place in accordance with requirements of Drawings.
2. Vertical Reinforcement: Provide continuous reinforcing full height of wall at wall ends, corners, intersections, jambs of openings and each side of control joints. Vertical reinforcing shall match and lap dowels which are at top of foundation walls and precast concrete beams.
3. Bond Beams: Provide horizontal reinforcing of 2 bars in minimum 8 inch deep grouted continuous bond beam at roof and elevated floor lines.
4. Parapets: Provide horizontal reinforcing of 1 bar in minimum 8 inch deep grouted continuous bond beam at top of parapets.
5. Bond Beam and Parapet Reinforcing at Vertical Control Joints: Place bars continuous through control joint and wrap mastic tape around bars for 18 inches each side of control joint.
6. Bond Beam and Parapet Reinforcing at Corners and Wall Intersections: Provide bent bars to match reinforcing at corners and wall intersections.
7. Lap splices in reinforcing in accordance with Structural Drawings.
8. Use spacers to position reinforcing steel in center of grout at center of wall as required by code.

J. Grouting:
1. Reinforcing steel is to be in place and inspected before grouting starts.

2. Vertical cells to be filled shall have vertical alignment to maintain a continuous cell area.
3. Keep cell to be grouted free from mortar.
4. Fill cells solidly with grout in lifts not to exceed 5 feet.
5. Grout may be poured by hand bucket, concrete hopper or through a grout pump.
6. Do not wet down grout space prior to pouring of grout.
7. Stop pours 1-1/2 inches below top of cell to form a key at pour points.
8. Grout shall be consolidated by mechanical vibration during placing before loss of plasticity in a manner to fill grout space. Grout pours greater than 12 inches shall be reconsolidated by mechanical vibration to minimize voids due to water loss. Grout pours 12 inches or less in height shall be mechanically vibrated, or rodded.
9. Grout barrier below bond beams shall be continuous wire lath or other approved material.
10. Grout beams over openings and bond beams in a continuous operation.
11. Solidly grout in place bolts, anchors and other items within wall construction.
12. Fully grout jambs and head of metal door frames connected to masonry. Filling of frames shall be done as each 2 feet of masonry is laid.
13. Use extreme care to prevent grout or mortar from staining face of the masonry.
14. Immediately remove grout or mortar which is visible on face of masonry.

K. Provisions for Other Trades and Built-in Items:
1. Build in items required and indicated, including but not limited to, reinforcing steel, anchors, flashings, sleeves, frames, structural steel, loose lintels, anchor bolts, nailing blocks, door and window frames and miscellaneous iron.
2. Enclosures for pipes, stacks, ducts and conduits:
a. Construct slots, chases, cavities, and similar spaces as required.
b. Where masonry is to enclose conduit or piping, bring it to proper level indicated and as directed.
c. Cover no pipe, conduit chases or enclosures until advised that Work has been inspected and approved.

L. Tolerances:
1. Standard Level of Quality:
a. External corners and other conspicuous lines and levels: +/- 1/2 inch in any 10’-0” section.
b. Line of sealant filled movement joints (allowable deviation from specified or indicated): +/- 1/2 inch in any 10’-0” section.
c. Actual cross sectional dimension of columns and walls (allowable deviation from specified or indicated): - 3/8 inch, + 3/4 inch.
d. Adjacent unit faces in plane (allowable deviation from specified or indicated): +/- 3/16 inch.
e. Mortar bed joint thickness (allowable deviation from specified or indicated): -1/8 inch, +1/4 inch.
f. Mortar head joint thickness (allowable deviation from specified or indicated): - 1/4 inch, + 3/8 inch.
g. Vertical alignment of the centerline of corresponding head joints in alternate courses when using other than stack bond (allowable deviation from specified or indicated): +/- 5/8 inch.
h. Vertical alignment of the centerline of all head joints in a total wall height not to exceed 30’-0” when using other than stack bond (allowable deviation from specified or indicated): +/- 2 inches.
i. Vertical alignment of the centerline of all head joints in total wall height not to exceed 30’-0” when using stack bond: (allowable deviation from specified or indicated): +/- one inch.

M. Joint and Crack Control: In accordance with NCMA TEK 10-1.

3.4 FIELD QUALITY CONTROL

A. Masonry Tests: Inspection and testing of masonry will be performed by a testing laboratory in accordance with Section 01 45 00.
   1. Provide free access to Work and cooperate with appointed firm.
   2. A set of 3 masonry prisms shall be built and tested in accordance with ASTM C1314 (formerly E447) Method B for each 5,000 square feet of wall area, but not less than one set of 3 masonry prisms for the Project.

3.5 ADJUSTING

A. Pointing of Mortar Joints:
   1. Point and fill holes and cracks in exposed mortar joints.
   2. Cut out defective mortar joints to a depth of at least 1/4 inch.
   3. When cutting is complete, remove dust and loose material by brushing or vacuuming.
   4. Prehydrate mortar for pointing by mixing dry ingredients with only sufficient water to produce a damp mass of such consistency that it will retain its form when it is pressed into a ball with hands but will not flow under trowel.
   5. Allow mortar to stand for a period of not less than one hour nor more than 2 hours, after which remix with addition of sufficient water to produce satisfactory workability.
   6. Pointing mortars shall be identical to adjacent mortar in similar joints and finish results shall match and be indistinguishable from original mortar used.
   7. Premoisten joint and apply mortar tightly.
   8. Tool to match adjacent joints.
   9. Moist cure for 72 hours.

B. Patching: If approved by Architect, patching of exposed masonry walls shall be done at conclusion of general Work and shall conform as closely as possible to similar surrounding or adjoining Work.

3.6 CLEANING

A. Daily Cleaning: Keep walls clean. Soiled masonry from mortar and grout spills which will be exposed to view at completion of Project shall be cleaned immediately with stiff fiber brushes until wall is free of dropped or spattered mortar.

B. Walls indicated to be painted shall be cleaned with stiff fiber brushes until wall is free of all dropped and splattered mortar and irregular surfaces that would telegraph through the painted finish or interfere with paint adhesion.

C. Clean walls to be exposed in the finished work in accordance with Section 04 01 20. Do not clean walls by sand blasting.

D. Remove scaffolding and equipment used in Work.

E. Clean up debris, refuse and surplus material and remove from premises.

3.7 PROTECTION

A. Furnish temporary protection for exposed masonry corners subject to injury.

B. Carefully cover tops of walls left incomplete at conclusion of day's Work with tarpaulins or other approved covering.

C. In hot and dry weather, protect masonry against too rapid drying.

D. Protect finished Work against freezing for a period of not less than 48 hours by means of enclosures, artificial heat, or such other protective methods as may be required.

END OF SECTION

SECTION 05 10 00
STRUCTURAL STEEL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Structural steel framing including, but not limited to:
   1. Columns
   2. Beams
   3. Lintels
   4. Anchor Bolts
   5. Shelf Angles
   6. Bearing Plates,
   7. Miscellaneous Structural steel items.
   8. Architecturally exposed structural steel framing.

1.02 SUBMITTALS

A. Shop Drawings: Submit shop and erection Drawings clearly showing each piece required for fabrication and erection. Drawings shall include material grade, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols showing size, length, and type of each weld.

B. Test Reports: Submit reports for welded connection tests.

C. Submit anchor setting drawings clearly showing location of all anchor bolts and embedded plates to be anchored in concrete and masonry construction. Provide templates for anchor bolts.

1.03 QUALITY ASSURANCE

A. Welding:
   1. Performed by certified welders in compliance with AWS D1.1 Structural Welding Code.
   2. Welders shall be duly qualified within the last 12 months in the position in which they are to weld and the qualifications and Specifications for workmanship shall comply with the AWS requirements "AWS Structural Welding Code - Steel."

B. Certifications:
   1. Prior to fabrication or shipment of material to the job site, furnish certification of the Manufacturer of the structural steel that material furnished meets or exceeds requirements of ASTM standards specified or noted on Drawings, for each type of material.
   2. Prior to site welding operation, submit welders' written certifications and qualifications.

C. Tolerances: All steel exposed to view shall be architectural steel, and tolerances as a minimum shall comply with section 10 of AISC code of standard practice.

D. Quality Assurance shall comply with Chapter N of ANSI/AISC 360-10, Specifications for Structural Steel Buildings

1.04 DELIVERY, STORAGE AND HANDLING

A. Exercise care during unloading, storage and erection to avoid damage. Dumping on the ground is not permitted.

B. Support material stored at the site completely free of the ground, and cover to avoid damage from the elements.

PART 2 PRODUCTS

2.01 MATERIALS

A. Structural Steel: In accordance with General Structural Notes on Drawings.
B. Steel Pipe Columns: In accordance with General Structural Notes on Drawings.
C. Steel Tube Columns: In accordance with General Structural Notes on Drawings.
D. High Strength Bolts: In accordance with General Structural Notes on Drawings.
E. Welded Anchors and Shear Connectors: ICC approved, as manufactured by KSM or Nelson.
F. Welding Rods: AWS A5.0, E70 series, low hydrogen type.
G. Metal Primer: VOC compliant. Do not provide primer for steel elements that are exposed and will not be painted.
   1. Interior Steel: Zinc oxide, alkyd primer, high-solids content, conforming to SSPC- Paint 25.1 as manufactured by Tnemec, Carboline, Sherwin-Williams or approved equal.
   2. Exterior Steel: 2-component, moisture-cured zinc-rich primer conforming to SSPC-PS 12.01 as manufactured by Tnemec, Carboline, Sherwin-Williams or approved equal.

2.02 FABRICATION

A. No slotted holes permitted at steel connections unless shown on Drawings or approved by Structural Engineer.
B. Where bolt holes in steel members are enlarged to more than 1/16 inch diameter oversize, provide 3/16 inch x 2-1/2 inch x 2-1/2 inch plate washers to steel members with 3/16 inch fillet weld all around.
C. Loose Steel Lintels: Provide loose structural steel shape lintels for openings and recesses in masonry walls and partitions, as shown. Weld adjoining members together to form a single unit. Provide not less than 4-inch bearing at each side of openings, unless otherwise shown.
D. Loose Bearing Plates: Provide loose bearing plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required.
E. Fabrication shall comply with Chapter M, Section M2 of ANSI/AISC 360-10, Specifications for Structural Steel Buildings

2.03 SHOP FABRICATION FOR USE OF HIGH STRENGTH BOLTS

A. Joint surfaces, including those adjacent to the bolt heads, nuts, or washers, shall be free of loose mill scale, burrs, or any foreign material (including paint). Field paint these areas with the specific shop paint after erection and completion.
B. Joints using high strength bolts shall be inspected by a representative of an independent testing laboratory acceptable to the Owner's Representative.

2.04 PAINTING - SHOP COAT

A. Do not provide primer for steel elements that are exposed and will not be painted.
B. Items of steel and iron Work indicated or specified to be encased in concrete shall not be painted.
C. Primer applied to members to receive spray fireproofing shall have been tested and certified as acceptable for application and shall be approved by fireproofing manufacturer.
D. Clean steel Work which will be painted per SSPC SP-2 requirements, minimum; or as required by paint manufacturer.
E. Shop paintings shall comply with Chapter M, Section M3 of ANSI/AISC 360-10, Specifications for Structural Steel Buildings

2.05 SOURCE QUALITY CONTROL

A. Tests: Where a welded splice is fabricated in beams or columns other than those detailed, fabricator shall have splice connection tested using one of the following methods: magnetic particle, radiographic, or ultrasonic. Testing shall be conducted by an independent testing laboratory and a report submitted to the Architect. The costs of this testing shall be borne by the fabricator.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:

1. Verify anchor bolt locations, grouting and elevation of base and setting plates, and other material set by other Trades before commencing Work.
2. Notify Architect of Work set by others which does not comply with specified tolerances. Do not erect material upon such Work until it has been satisfactorily corrected.
3. Start of Work implies acceptance of Work of other Trades affecting structural frame erection.

3.02 ERECTION

A. Erect Work to the proper lines and levels, plumb and true, and in correct relation to other Work maintain this condition to completion.

B. Erection shall comply with Chapter M, Section M4 of ANSI/AISC 360-10, Specifications for Structural Steel Buildings

C. Connections:

1. Bolting:
   a. Fair-up holes with pins to align holes before bolting.
   b. Ream unfair holes to obtain alignment or drill new holes.
   c. Enlargement of holes with drift pins or burning of new holes is not permitted.
   d. Draw bolts up tight after members are aligned and leveled.
2. Welding:
   a. Submit certification that welders have passed AWS code qualification tests.
   b. Refer to Shop Drawings for weld size and dimensions.
   c. Close joints exposed to weathering with continuous 1/8-inch seal welds.
   d. Grind smooth exposed welds where indicated.
   e. Protect finish material from damage due to welding.

D. Exposed Steel:

1. Verify the condition of exposed steel after erection.
2. Exert particular care to provide a neat, accurate installation with members straight and true, corners and edges square, sharp and free from burrs and irregularities, adjacent members perfectly matched and no bolts or rivets exposed.
3. Remove erection bolts and seats and plug weld and grind holes smooth.
4. Do not provide primer for steel elements that are exposed and will not be painted.
5. Remove all shop markings from steel that is intended to be exposed and not painted in a manner that does not leave evidence of the shop marking.

E. Touch-up Painting:

1. Remove temporary guys, bracing and bracing clips, and grind flush remaining burrs, before painting. Remove welding slag, spatter, rust and burnt paint and wire brush clean welds before touch-up.
2. Touch-up Painting: Touch-up welds, abrasions, bolted connections, and other

areas where shop prime paint has been removed or is damaged with specified prime paint or galvanizing repair paint.

3.03 CLEANING

A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Metal fabrications, including items fabricated from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems in other Sections of these Specifications. Types of metal items include, but are not limited to, the following:

1. Carpenter's ironwork.
2. Miscellaneous steel trim.

1.02 SUBMITTALS

A. Shop Drawings: Submit Drawings for the fabrication and erection of assemblies of items which are not completely shown by the Manufacturer's data sheets.

1. Include plans and elevations at not less than 1 inch to 1'-0" scale, and include details of sections and connections at not less than 3 inches to 1'-0" scale.
2. Show anchorage and accessory items.

1.03 QUALITY ASSURANCE

A. Standards: Comply with the following, except as otherwise shown and specified:

1. AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings."
2. AISI "Specifications for the Design of Cold-Formed Steel Structural Members."
3. AWS "Structural Welding Code-Steel."
4. ASTM A6 "General Requirements for Rolled Steel Plates Shapes, Sheet Piping and Bars for Structural Use."

B. Qualifications: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."

1.04 DELIVERY, STORAGE AND HANDLING

A. Exercise care during unloading, storage and erection to avoid damage. Dumping on the ground is not permitted.

B. Support material stored at the site completely free of the ground, and cover to avoid damage from the elements.

1.05 PROJECT/SITE CONDITIONS

A. Field Measurements: Take field measurements prior to preparation of Shop Drawings and fabrication, where possible, to ensure proper fitting of the Work. Allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the Work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Wide Flange Steel Sections: ASTM A572 or A992 (Fy = 50 ksi).
B. Steel Shapes, Plates, Rod, Bars and Bar-size Shapes: ASTM A36.
C. Steel Tubing (Cold-formed Welded and Seamless): ASTM A500, Grade b (Fy = 46 ksi).
D. Steel Tubing (Hot Formed Welded and Seamless): ASTM A501, (Fy = 36ksi).
E. Cold-Finished Carbon Steel Bars: ASTM A108, Grade as selected by fabricator.
F. Hot-rolled Carbon Steel Sheets and Strips: ASTM A568 and ASTM A569, pickled and oiled.
G. Cold-rolled Carbon Steel Sheets: ASTM A611.

H. Hot-dip Galvanized Steel Sheets: ASTM A653, with G90 zinc coating.
I. Cold-drawn Steel Tubing: ASTM A512, sunk drawn, butt welded, cold-finished and stress-relieved.
J. Steel Pipe: ASTM A53, type as selected; Grade A. Black finish unless galvanizing is required. Standard weight, Schedule 40, unless otherwise shown or specified.
K. Perforated Metal Plate: 3/16 inch thick with 3/16 inch round holes at 3/8 inches on center, staggered (23% open), powder coated finish as specified in Section 05 05 13 - Factory-Applied Metal Coatings.
L. Anchors:
1. Masonry Anchorage Devices: Expansion shield, FS FF-S-325.
2. Toggle bolts: Tumble-wing type, FS FF-B-588; type, class and style as required.
3. Chemical Type Anchors: 2-component chemically curing anchors for concrete or masonry construction, capsule or injection type, designed to accept manufacturer's galvanized anchor rod.
M. Fasteners: Provide zinc-coated fasteners with galvanizing complying with ASTM A153 for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required for the installation of miscellaneous metal items.
1. Bolts and nuts: ASTM A307, Grade A, regular hexagon head.
2. Bolts, hexagon and square: ANSI B-18.2.1.
3. Bolts, round head: ANSI B-18.5.
4. Lag bolts: Square head type.
5. Wood screws: ANSI B-18.6.1, flat head carbon steel.
6. Plain washers: ASTM F844 helical spring type carbon steel.
N. Gratings: McNichols welded heavy duty steel grating, meeting ADA spacing requirements, 1-3/4 inch by 3/16 inch.
O. Galvanizing: ASTM A123 for steel plates, bars and strips.
P. Metal Primer (Shop Paint): VOC compliant. Do not provide primer for steel elements that are exposed and will not be painted.
1. Interior Steel: Zinc oxide, alkyd primer, high-solids content, conforming to SSPC- Paint 25.1 as manufactured by Tnemec, Carboline, Sherwin-Williams or approved equal.
2. Exterior Steel: 2-component, moisture-cured zinc-rich primer conforming to SSPC-PS 12.01 as manufactured by Tnemec, Carboline, Sherwin-Williams or approved equal.

2.02 ACCESSORIES
A. Inserts and Anchorages: Furnish inserts and anchoring devices to be set in concrete or built into masonry for installation of Miscellaneous Metal Work. Provide setting Drawings, templates, instructions and directions for installation of anchorage devices.

2.03 FABRICATION
A. General: For fabrication of Miscellaneous Metal Work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of surface finishes, including zinc coatings.
B. Shop Assembly: Preassemble items in shop, when possible, to minimize field splicing and assembly of units at the site. Disassemble units only to extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
C. Workmanship:
1. Use materials of the size and thickness shown, or if not shown, of the required size and thickness to produce adequate strength and durability of the finished product for the intended use. Work to the dimensions of fabrication and support. Use type of materials shown or specified for various components of

Work.

2. Form exposed Work true to line and level with accurate angles, surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.
3. Weld corners and seam continuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.
4. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type shown, or if not shown, use Phillips flat-head (countersunk) screws or bolts.
5. Provide for anchorage of type shown, coordinated with supporting structure and the progress schedule. Fabricate as required to provide adequate support for the intended use of the Work.
6. Cut, reinforce, drill and tap Miscellaneous Metal Work as may be required to receive finish hardware and similar items of Work.
7. Use hot-rolled steel bars for Work fabricated from bar stock, unless Work is indicated to be fabricated from cold-rolled, or cold-finished stock.

D. Carpenter's Iron Work:
1. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware are specified in Division 6 Sections.
2. Manufacture or fabricate items of sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

E. Miscellaneous Steel Trim: Provide metal items miscellaneous includes steel cover for sliding hardware mechanisms in Jail Cell Doors. Provide shapes and sizes as required for the profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other Work.

2.04 FINISHING

A. Galvanizing: Comply with ASTM A123 and A153 for the hot-dip process after fabrication for items specifically identified to have galvanized coatings.

B. Shop Painting:
1. Shop paint Miscellaneous Metal Work, except those members or portions of members to be embedded in concrete or masonry, surfaces, and edges to be field welded, and galvanized surfaces, unless otherwise indicated.
2. Remove scale, rust, and other deleterious materials before shop coat of paint is applied. Clean in accordance with SSPC SP-2, SP-3, or SP-7, as required. Remove oil, grease, and similar contaminants in accordance with SSPC SP-1.
3. Apply one shop coat of metal primer paint to fabricated metal items, except apply 2 coats of paint to surfaces which are inaccessible after assembly or erection.
4. Immediately after surface preparation, brush or spray on metal primer paint in accordance with Manufacturer's instructions, and to provide a uniform dry film thickness of 2 mils for each coat.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.
B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work.

3.02 PREPARATION
A. Clean and strip primed steel items to bare metal where site welding is required.
B. Supply items required to be cast into concrete or embedded in masonry with setting templates to appropriate Trades.
C. Set sleeves in concrete with tops flush with finish surface elevations. Protect sleeves from water and concrete entry.

3.03 INSTALLATION
A. Install items plumb and level, accurately fitted, free from distortion or defects.
B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
C. Field weld components indicated on Shop Drawings.
D. Perform field welding in accordance with AWS D1.1.
E. Install pipe bollards in concrete footings plumb and level, accurately fitted, free from distortion or defects. Provide adequate bracing as required to hold bollard in position until concrete has been placed and cured.
F. Obtain Architect approval prior to site cutting or making adjustments not scheduled.
G. Touch-up Painting: Touch-up welds, abrasions, and other areas where shop prime paint has been removed or is damaged with specified prime paint or galvanizing repair paint.

3.04 ERECTION TOLERANCES
A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset from True Alignment: 1/4 inch

3.05 CLEANING
A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises.

END OF SECTION

SECTION 06 05 23
WOOD FASTENERS

PART 1 - GENERAL

1.01 SCOPE

A. Pre-engineered metal connectors used to support wood, plated truss, or composite wood from a concrete, masonry, steel, wood, or composite wood supporting member(s).

B. Related work in other areas.

1. Cast-in-Place Concrete – Section 033000.
2. Structural Steel – Section 051000.

1.02 REFERENCES

A. ASTM A36 – Standard Specification for Carbon Structural Steel.

B. ASTM A193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.

C. ASTM A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

D. ASTM A449 – Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use.

E. ASTM A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

F. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

G. ASTM A706 – Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

H. ASTM A924 – Standard Specifications for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

I. ASTM A1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

J. ASTM D7147 – Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers.

K. ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

L. ASTM F1667 – Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

M. AISI 2001 – Cold-Formed Steel Specification.

N. 2005 NDS – National Design Specification.

1.03 DELIVERY, HANDLING AND STORAGE

A. Deliver products to the job site in manufacturers or distributor’s packaging undamaged, complete with installation instructions.

B. Protect and handle materials in accordance with manufacturer’s recommendations to prevent damage or deterioration.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. All wood, masonry, concrete, and steel fasteners shall be as manufactured by Simpson Strong-Tie Company, Inc., 4120 Dublin Boulevard, Suite 400, Dublin, California, 94568, (800) 999-5099, or approved equal.

2.02 MATERIALS

A. Steel.
   1. Sheet: ASTM A36, A653, A1011.
   2. Fasteners: ASTM A307, F1554, F1667, SAE C1022 (SDS screws).

B. Stainless Steel.
   1. Sheet: ASTM A240, A480.
   2. Fasteners: STM A493.

C. Finishes.
   1. Gray paint.
   2. Hot-dipped galvanized or electro-plated galvanized: G90, G185 (ZMAX or HDG).
   3. Powder-coated paint.
   4. Electro-galvanized, zinc dichromate and Double Barrier for SD and SDS screws.

2.03 FABRICATION

A. Shop assembly to occur per the manufacturer's approved production drawings.

B. Fabrication tolerances per manufacturer.

C. Fabrication requiring welding shall be performed in accordance with the current American Welding Society's standards.

D. The manufacturer's identification shall be stamped into the metal part and/or a label may be attached to the part with adhesive.

2.04 TESTING

A. Allowable loads published in manufacturer's catalog to be determined using the minimum load from static and/or cyclic analysis and one or more of the following test methods:
   1. Static load tests in wood assemblies.
   2. Static load tests in steel jigs.
   3. Static load tests of products embedded in concrete or masonry.

B. Testing to determine allowable loads shall be performed as per ICC ESR Acceptance Criteria and/or ASTM Standard.

C. Allowable loads for hangers are determined by a static load test resulting in not more than a 1/8" deflection of the joist relative to the header, or either the lowest of 3 or average of 6 ultimate load divided by 3, or the fastener allowable load as determined by the NDS, whichever is lower.

D. Manufacturer to provide code testing data on all products that have been code tested upon request.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Unless otherwise noted in the manufacturer's catalog, allowable loads are for Douglas Fir-Larch under continuously dry conditions. Allowable loads for other species or conditions must be adjusted according to the code. See manufacturer's catalog for additional notes and requirements.

B. Built-up lumber (multiple members) must be fastened together to act as one unit to resist the applied load.
C. Verify that the dimensions of the supporting member are sufficient to receive the specified fasteners

3.02 INSTALLATION

A. Unless otherwise noted in the manufacturer's catalog, bolts, screws, and/or nails shall not be combined.
B. All nails shall be common unless otherwise noted in the manufacturer's catalog or substituted by the engineer of record, with a reduction taken.
C. Unless otherwise noted in the manufacturer's catalog, bending steel in the field may cause fractures at the bend line. Fractured steel will not carry load and must be replaced. When bending is allowed or required in the catalog, the connector shall be allowed one cycle bend, one time only.
D. Galvanized connectors should not be placed in contact with treated wood unless the treated wood is adequately verified to be suitable for such contact. Some wood treatments may accelerate metal deterioration. See the manufacturer's catalog for specific recommendations.
E. A fastener that splits the wood will not carry the allowable load. Evaluate splits to determine if the connection will perform as required. Dry wood will split more easily and should be evaluated as needed. If wood tends to split, consider pre-boring holes with diameters not exceeding 0.75 of the nail diameter, for screws in wood with a specific gravity of 0.5 or greater use 5/32" for SDS, 5/64" for SD9 or SD10, and 1/16" for SD8 (2005 NDS 11.1.4 and 11.1.5.3).
F. Wood shrinkage shall be taken into account when designing and installing connections.
G. Built-up lumber (multiple members) must be fastened together to act as one unit to resist the applied load.
H. Top flange hangers may cause unevenness. Possible remedies should be evaluated by a professional and include using a face mount hanger, routering the beam, or cutting the subfloor to accommodate the top flange thickness.
I. Do not overload by exceeding the manufacturer's catalog allowable load values.
J. Unless otherwise noted in the manufacturer's catalog, fill all fastener holes with fastener types as specified in the manufacturer's catalog.
K. All specified fasteners must be installed according to the instructions in the manufacturer's catalog.
L. Bolt holes shall be a minimum of 1/32" and a maximum of 1/16" larger than the bolt diameter (2005 NDS 11.1.2.2).
M. Install all specified fasteners before loading the connection.
N. Use proper safety equipment.
O. Welding shall be in accordance with the American Welding Society (AWS) standards.
P. Welding galvanized steel may produce harmful fumes, follow proper welding procedures and safety precautions.
Q. Nail tools with hole-location mechanisms may be used to install connectors, provided the correct quantity and type of nails are properly installed in the nail holes.
R. Joist shall bear completely on the connector seat, and the gap between the joist end and the header or back plate shall not exceed 1/8".
S. Installer of ATS system to cut rods to length as required.
T. Anchor bolt nuts should be finger-tight plus 1/3 to 1/2 turn with a wrench. Do not use an impact wrench to tighten nuts on the anchor bolts.
U. Modifications to products or changes in installation procedures should only be made by a qualified designer. The performance of such modified products or altered installation procedure is the sole responsibility of the designer.

3.03 FIELD QUALITY CONTROL

A. Determine that the proper part is being used in the correct application and has been fabricated by the approved manufacturer by observation of the stamp into the metal part and/or the adhesive label on the product denoting part and manufacturer name.

B. Before substituting another brand, confirm load capacity based on published testing data and calculations per section 2.04. The engineer/designer of record shall evaluate and give written approval for substitution prior to installation.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Finish Carpentry and Millwork- Section 06 20 00.
B. Gypsum Board - Section 09 29 00.
C. Painting - Section 09 90 00.

1.02 QUALITY ASSURANCE

A. Lumber Grading Rules and Wood Species to be in conformance with PS 20.
B. Grading rules of following associations apply to materials furnished under this section:
   1. West Coast Lumber Inspection Bureau (WCLIB).
   2. Western Wood Products Association (WWPA).
C. Plywood Grading Rules:
   1. Softwood Plywood - Construction and Industrial PS 1.
D. Grade Marks:
   1. Identify lumber and plywood by official grade mark.
      a. Grade stamp to contain symbol of grading agency certified by Board of Review. American Lumber Standards Committee, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which graded where applicable,
      b. S-Dry: Maximum 19% moisture content.
   2. Softwood Plywood: Conforming to PS 1.
E. Reference Standards:
   1. Federal Specifications (FS):
      a. FF-B-561C, Bolts (SCREW), Lag.
      b. FF-B-575C, Bolts, Hexagon and Square.
      c. FF-B584E, Bolts, Finned Neck; Key Head; Machine; Ribbed Neck; Square Neck, Tee Head.
      d. FF-N-105B (3), Nails, Wire, Brads, and staples.
      e. FF-N-836D (1), Nut, Square, Hexagon, Cap, slotted, Castellated, Clinch Knurled, and Welding.
   2. Product Standards (PS) (Latest editions):
      a. PS 1, Construction and Industrial Plywood.
      b. PS 20, American Softwood Lumber Standard.
      c. PS 56, Structural Glued Laminated Timber.
   3. Western Wood Products Association (WWPA).
      a. Standard Grading Rules for Western Lumber.

1.03 DELIVERY, STORAGE AND HANDLING

A. Immediately upon delivery to job site, place materials in area protected from weather.
B. Store materials a minimum of 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate side ventilation.
C. Do not store materials in wet or damp portions of the project.
D. Protect sheet materials from corners breaking and damaging surfaces while unloading.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lumber
1. Dimensions:
a. Specified lumber dimensions are nominal.
b. Actual dimensions to conform to PS 20.
2. Surfacing: Surface four sides (S4S), unless specified otherwise.
3. Framing lumber, Douglas Fir - Larch unless specified otherwise:
a. Light framing:
(1) General framing: Standard grade.
(2) Plates, blocking, bracing and nailers: Utility grade.
(3) Bracing, blocking, bulkheading and general utility purposes: Stud grade.
b. Studs:
(1) Load bearing: Construction grade.
(2) Non-load bearing: Stud grade.
c. Structural light framing, No. 2.
d. Structural joists and planks No. 2.
4. Open Web Steel Joists by Redbuilt – unless specified otherwise.

B. Plywood:
1. Roof sheathing:
a. Grade: CDX.
b. Identification Index: 32/l6.
2. Wall sheathing:
a. Grade: CDX.
b. Identification Index: 24/0.

C. Rough Hardware:
1. Bolts
a. FS FF-B-575
b. FS FF-B-584.
2. Nuts: FS FF-N-836.
3. Lag screws and bolts: FS FF-B-561.
4. Nails and staples: FS FF-N-105.
5. Joist hangers: Minimum 18 gauge painted steel.
6. Metal Cross-bridging: 16 gauge painted or zinc-coated steel:
a. Nailable type with two holes in each end.
b. Compression type with prongs at each end.
7. Bar or strap anchors: ASTM A525 zinc coated steel, 12 gauge minimum.
8. Ply-clips: Extruded 6063-T6 aluminum alloy.

PART 3 - EXECUTION

3.01 INSPECTION
A. Verify that surfaces to receive rough carpentry materials are prepared to required grades and dimensions.

3.02 INSTALLATION
A. Comply with Conventional Light-Frame Construction Design Provisions, International Building Code, Section 2320.

3.03 PROTECTION
A. Protect sheathing with waterproof covering until roofing has been installed.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY AND MILLWORK

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE
- A. Rough Carpentry - Section 061000.
- B. Painting - Section 099000.

1.02 SUBMITTALS
- A. Shop drawings indicating layout and detailing.
- B. Sample of finishes and chips for color verification or selection.
- C. List of material.

1.03 DELIVERY, STORAGE AND HANDLING
- A. Deliver, store and handle millwork to prevent deterioration and damage.
- B. Materials shall not be delivered and/or stored until the job is past any wet installations or operations which might affect the humidity, and in no case should humidity exceed 55 percent.

1.04 JOB-ASSEMBLED WORK
- A. When installing items not shop-assembled, distribute to best overall advantage the defects allowed in the quality grade specified.

PART 2 – PRODUCTS

2.01 MISCELLANEOUS MILLWORK AND SHELVING
- A. All work shall comply with the Quality Standards of the Architectural Woodwork Industry:
  1. Custom grade for laminate clad, conforming to AWI 400 B; see drawings for location.

2.01 MATERIALS
- A. Exposed Surfaces: Plastic laminate.
- B. Concealed Surfaces: Mill option.
- C. Countertops: Plastic laminate.
- D. Adhesives: Type I, CS 35-61.
- E. Concealed Plywood: Mill option.
- F. Softwood: Limited to framing members (concealed), Ponderosa Pine, Sugar Pine, or Southern Yellow Pine.

PART 3 – EXECUTION

3.01 MILLWORK
- A. Fabrication Workmanship: Comply with Section 400 Architectural Woodwork Institute Publication, "Architectural Casework Details, "and in accordance with detail requirements of the drawings.

3.02 INSTALLATION
- A. Millwork: In accordance with locations and detailing on the drawings.

END OF SECTION

SECTION 06 41 16
PLASTIC LAMINATE

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and services necessary for the installation of plastic laminate, locations as required by the Contract Documents, including, but not limited to, the following laminate types:
   1. Standard decorative laminates.
   2. Wood surfacing decorative laminates.
   3. Surfacing for finishing casework, millwork, countertops, and walls.

B. Related work in other areas:
   1. Plastic Faced Casework – Section 123416.

1.02 REFERENCES

A. Reference standards, in addition to requirements, comply with applicable provisions of the following for design materials, fabrication and installation of component parts.
   1. NEMA LD3-2005.

1.03 SUBMITTALS

A. Provide copies of manufacturer's technical literature for plastic laminate material, adhesive for bonding plastic laminate, miscellaneous accessories, and related components.

B. Samples: Plastic laminates, 5" x 7", for each type, color, pattern, and surface finish.
   1. Plastic laminate colors shall be determined by the Owner from the standard color selections.
   2. Upon selecting colors, the Contractor shall provide 5" x 7" samples for each type, color, pattern, and surface finish, with one sample applied to core material.

C. Informational Submittals: Submit the manufacturer's written handling, storage, and installation instructions separately from other submittals.

1.04 QUALITY ASSURANCE

A. Fabricator/Installer Qualifications: Company specializing in fabricating and installing plastic laminate finished work with a minimum of three (3) years experience.

B. Source Limitations: Obtain plastic laminate materials through one source from a single manufacturer.

C. Fire Test Response Characteristics: Provide plastic laminate with the following surface burning characteristics as determined by testing identical products per ASTM E84 by UL or another testing and inspecting agency acceptable to the local authority having jurisdiction.
   1. Flame Spread Index: 25 or less.
   2. Smoke Developed Index: 450 or less.

D. Mock-ups: Build mock-ups to verify the selections made under paragraph 1.03.B, demonstrate aesthetic effects, and to set a quality standard for fabrication and installation.

1.05 DELIVERY, HANDLING AND STORAGE

A. Deliver, store, handle, and protect materials in accordance with the manufacturer's written instructions.

B. Provide protective coverings of suitable material, taking special precautions at corners.

1.06 SEQUENCING

A. Coordinate sizes and locations of plumbing, cut-outs and other related work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Plastic laminate shall be as manufactured by Formica Corporation, 10155 Reading Road, Cincinnati, Ohio, 45241, (513) 786-3400, or approved equal.

2.02 MATERIALS

A. Decorative Plastic Laminate: Manufacturers standard and custom decorative surface papers with melamine resins, bonded under heat and pressure to kraft paper backing sheet with phenolic resins.

B. Standard Decorative Laminate: General purpose type decorative laminate, cabinet liner, and backing sheet.
   1. Grade: Best grade based on application.
   2. Thickness: Based on application.

C. Solid color decorative laminate.
   1. Grade: CC, HCS.
   2. Thickness: 0.040 inches.

D. Wood surfacing decorative laminate.
   1. Grade: Pre-finished.
   2. Sheet Size: Per manufacturer based on application.

E. Edges: PVC edge banding, 0.12 inch thick, matching laminate in color, pattern, and finish.

2.03 ADHESIVE

A. Adhesive for bonding plastic laminate shall be urea-formaldehyde free.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine surfaces for conditions that would adversely affect decorative plastic laminate surfacing. Bring all unsatisfactory conditions to the attention of the Contractor.

B. Do not proceed with the work until all unsatisfactory conditions are corrected. Proceeding with the work indicates that the installer has found the conditions to be satisfactory and assumes full responsibility for the work thereafter.

3.02 INSTALLATION

A. Install plastic laminate in accordance with the manufacturer's written installation instructions, approved submittals, and the requirements of the applicable sections of the Project Manual.

3.03 CLEANING AND PROTECTION

A. Clean plastic laminate surfaces in accordance with the manufacturer's instructions.

B. Do not permit construction near unprotected surfaces.

END OF SECTION

SECTION 06 61 16
SOLID SURFACE FABRICATIONS

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and services necessary for the installation of the solid surface fabrications on countertops, aprons, and backsplashes, locations as noted on the Contract Drawings.

B. Related work in other areas.

1. Metal Fabrications – Section 055000.
2. Gypsum Board– Section 092900.
3. Plastic Faced Casework – Section 123416.
4. Plumbing System – Division 22.
5. Electrical System – Division 26.

1.02 QUALITY ASSURANCE

A. The manufacturer shall be a company specializing in fabricating and installing solid surfacing fabrications similar in complexity to those required in this Project, including specific requirements indicated in the Contract Drawings.

B. Obtain solid surfacing fabrications and materials through a single source.

C. References:

1. ISSFA-2 – Classification and Standards Publication of Solid Surface Metering.
2. NSF Standard 51 – Food Equipment Materials.
3. ASTM G21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

D. Provide solid surfacing fabrications with the following surface burning characteristics as determined by testing identical products her ASTM E84 by UL 723.

1. Flame Spread Index: 25 or less.
2. Smoke Developed Index: 450 or less.

E. Mock-ups.

1. Prior to fabrication of architectural millwork, erect sample unit to further verify selections made under sample submittals and to demonstrate the quality of materials and execution.
2. Mock-ups shall be determined by the Owner and the Architect.
3. Build the mock-up to comply with the contract documents and install in a location as directed by the architect.
4. Notify the architect two weeks in advance of the date of when the mock-up will be delivered.
5. Should mock-up not be approved, re-fabricate, and reinstall until approval is secured. Remove rejected units from site.
6. After approval, the mock-up may become a part of the project.
7. This mock-up, once approved, shall serve as a standard for judging quality of all completed units of work.

1.03 SUBMITTALS

A. Provide copies of manufacturer's technical data for each type of product indicated, including manufacturer literature, product physical and performance criteria, fabrication information, warranty information, material safety data sheets (MSDS), cleaning and maintenance procedures, and compliance with specified performance requirements.

B. Shop Drawings: Show location of each item, design parameters, adjacent construction, materials, thickness, fabrication details, tolerances, jointing methods, method of support, anchorages, integration with plumbing fixtures and connections, colors, and other components.

1. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in solid surface.

C. Samples: Provide standard samples for manufacturer's full line of colors, patterns, textures, finishes, and edge treatments for Owner selection. Upon selection by Owner submit a minimum 6" x 6" sample.
1. Cut sample and seam together for representation of inconspicuous seam.
2. Approved samples will be retained as a standard for work.

1.04 DELIVERY, HANDLING AND STORAGE

A. Deliver, store, handle, and protect materials in accordance with manufacturer's written instructions.

B. Handle materials to prevent damage to finished surfaces. Provide protective coverings of suitable material to prevent physical damage or staining following installation for duration of project. Take special precautions at corners.

1.05 ENVIRONMENTAL CONDITIONS

A. Do not deliver or install solid surfacing fabrications until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at design levels during the remainder of the construction period.

B. Verify that field measurements are as indicated on the shop drawings.

1.06 SEQUENCING

A. Sequence work to permit installation of adjacent affected construction, plumbing rough-in, etc.

B. Coordinate sizes and locations of plumbing, cut-outs, and other related work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.07 WARRANTY

A. Provide manufacturer's 10-year limited warranty covering replacement of the material except for non-covered conditions as follows.
1. Minor stains, scratches, water spots, and burns that may be corrected by techniques covered in the manufacturer's Use and Care Guide.
2. Failure of solid surfacing joint material.
3. Failure due to structural failure of base cabinets or other solid surfacing substrate construction.
4. Use for purposes other than indoor finish material.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Solid surface fabrication products shall be Formica Surfacing as manufactured by Formica Corporation, 10155 Reading Road, Cincinnati, Ohio, (800) 367-6422, or approved equal.

2.02 MATERIALS

A. Solid surfacing materials shall be homogeneous solid sheets of filled plastic resin complying with ISSFA-2 with eased edge treatments, colors and patterns to be determined by the Owner.

B. Adhesives: For seams and drop edges, provide manufacturer's recommended product, color to blend with sheet material.

2.03 FABRICATION

A. Assemble work at shop following manufacturer's printed fabrication instructions and deliver to job ready for installation. Manufacture in largest practical pieces for handling and shipping without seams.
   1. Grade: AWI, Premium.
   2. Fabricate work square and to required lines.
   3. Recess and conceal fasteners, connections, and reinforcing.
   4. Design construction and installation details to allow for expansion and contraction of materials. Properly frame material with tight, hairline joints, held rigidly in place.
   5. Fabricate countertops with integral back splash and side splash to profiles and sizes indicated.
   6. Fabricate items to profiles shown with connections and supports as indicated, or as required for complete installation in accordance with manufacturer's written instructions.
   7. Provide cut-outs for plumbing fixtures and trim, washroom accessories, appliances, and related items. Confirm layout with manufacturer's cut-out templates before beginning work. Round corners of cut-outs and sand edges smooth.
   8. Do not exceed manufacturer's recommended unsupported overhang distances.
   9. Finish exposed surfaces smooth and polish to low sheen.
   10. Radius corners and edges.

B. Colors and finishes shall be determined by the Owner from the manufacturer's standard color chart.

C. Tolerances.
   1. Variation in component size, +/- 1/8 inch.
   2. Location of openings, +/- 1/8 inch from indicated location.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with fabricator present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Verify field measurements to approved shop drawings.

3.02 INSTALLATION

A. Install in accordance with manufacturer's written installation instructions. Provide templates and rough-in measurements.
   1. Set items plumb, level, rigid, and solidly adhered to substrate.
   2. Pre-fit items, adjust supports to make fit. Align joints over support framing.
   3. Apply dabs of silicone on supports; place items on supports and attach.

B. Splashes: Install splashes using manufacturer's standard color-matched silicone sealant. Apply silicone to back surface only. Place thin bead of seam adhesive along edge where splash seats.
   1. Seal joint between top and splashes, and between splashes.

C. Tolerances.
   1. Maximum variation from true dimension, 1/8 inch.
   2. Maximum offset from true position, 1/8 inch.

3.03 REPAIR

A. Repair or replace damaged work which cannot be repaired to architect's satisfaction.

3.04 CLEANING AND PROTECTION

A. Clean and polish fabrications in accordance with manufacturer's instructions.
B. Promptly remove excessive mastic and seam adhesive.
C. Clean tops and splashes in accordance with manufacturer's recommendations.
D. Protect surfaces from damage until Date of Substantial Completion.

END OF SECTION

SECTION 07 92 00
JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes the following:
   1. Joints sealants and installation accessories for interior and exterior locations except for exterior wall joint sealants and acoustical sealants as specified in other Sections.

1.2 SUBMITTALS

A. Product Data:
   1. Submit Manufacturer's current specifications and recommended installation procedures.
   2. Submit sample warranty to be signed jointly by applicator and Manufacturer.
   3. Submit Manufacturer's standard color chart.
   4. Certification in the form of standard data sheet or letter that each type of compound and sealant to be furnished complies with these specifications.
   5. Statement that each product to be furnished is recommended for the application shown for this project.
   6. Complete instructions for handling, storage, mixing, priming, installation, curing and protection of each type of sealant.

B. Shop Drawings: Illustrations in sufficient detail to show installation and interface of the work of this Section with the work of adjacent trades.

C. Field Adhesion Test and Stain Reports: Submit copies of logs and test reports showing results of field adhesion testing and stain testing.

D. Submit three (3) samples of each specified product, 12 inch minimum lengths, and installed between representative samples of materials to be sealed for each product. Architect's acceptance will be for color only.

E. Certifications: Submit certification signed jointly by Contractor and Sealant Manufacturer, certifying that products comply with specification requirements, are proper and adequate for the condition of installation and use, have been properly selected and designed for applications where they are to be installed, and that sealants and accessory materials have been installed in accordance with Manufacturer’s printed instructions and recommendations of Manufacturer’s field representative.

F. Provide a procedure detailing the cleaning, priming, taping, tooling and other steps recommended to ensure satisfactory function and appearance

G. Contract Closeout: Submit Manufacturer's Warranty.

1.3 QUALITY ASSURANCE

A. Qualifications: Installers shall be thoroughly trained and experienced in the necessary skills and shall be thoroughly familiar with the specified requirements.

B. Field Adhesion Testing: Perform preconstruction adhesion testing for each type of sealant and substrate as follows:
   1. Arrange for Manufacturer’s field technical representative to be present during testing.
   2. Install sealant in test joints in minimum 60 inch lengths.
   3. Test joints by standard field adhesion hand pull test.
   4. For joints with dissimilar substrates, test adhesion to each substrate separately as recommended by sealant Manufacturer.
   5. Conduct number of field adhesion tests for each type of sealant and each type of substrate as follows:

a. Not less than 10 tests for the first 1,000 feet of installed sealant and 1 test for each additional 1,000 feet of sealant installed, or 1 test per floor per elevation.

6. Document results of field adhesion tests and record results in field adhesion test log.
7. Include in log data on pull distance used to test each joint sealant.
8. Include data on joints where material connected with pull portion of sealant failed to adhere to joint substrate or tore cohesively.
9. Inspect joints and record data for the following:
   a. Complete fill.
   b. No voids.
   c. Joint dimensions matching those of Manufacturer's recommended details.
10. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
11. Do not install joint sealants that fail to adhere to joint substrates during testing.
12. Repair sealant test areas by removing damaged materials and applying sealant to test area using same procedure used to originally install the sealant.

C. Stain Testing: Perform Stain testing of natural stone, masonry and other porous substrates proposed for use in the Work. Obtain actual samples of materials proposed for use and test to determine if permanent discoloration of porous surfaces will occur from direct contact with sealants. Perform stain testing in conformance with ASTM C1248 and as follows:
1. Arrange for Manufacturer's field technical representative to be present during examination of test results.
2. Cut substrate to provide flat surface for application of sealant.
3. Separate substrate materials by removable shims to create 1/2 x 1/2 x 3 inch joint.
4. Fill joint with scheduled sealant, tool, and allow to cure for 21 days at room temperature.
5. After 21 day curing, remove shims, compress joint to 50 percent of original joint width to 1/4 inch, and place in an oven at 158 degrees F. for 14 days.
6. After 14 days in oven, remove and allow sample to cool to room temperature.
7. Examine sample to determine presence of discoloration or change in appearance in any way to exposed surface.
8. After visual inspection, cut sample in half to determine presence of discoloration or change in appearance in any way into the sample itself at the adhesive bond line and presence of bleeding into the area around the adhesive bond line.
9. Document results of stain tests and record results in stain test log.
10. Do not install sealants that show evidence of staining substrates.

D. Field Color and Workmanship Samples: Seal a section of joint as directed, under job conditions, at least 7 days prior to start of work for review by Architect. When approved, sample shall be used as a standard of comparison for remainder of work.

E. Manufacturer and sealants Subcontractor to submit log of testing, on company letterhead for each test performed indicating, but not limited to the following:
1. Date
2. Project identification
3. Sealant identification including name, type and batch number
4. Test performance, i.e., acceptable, marginal, not acceptable
5. Storage conditions
6. Signature of person conducting test

F. Location where the test was conducted.

G. If tests indicate sealant material is marginal or not acceptable, sealant is not to be used. Tester is to immediately notify Architect and Contractor of the deficient materials. The sealant Subcontractor is to immediately remove deficient materials from site.

H. Inspections
1. Coordinate sealant selection and application as necessary for the full and satisfactory compatibility and performance between all sealants used under this section with all other applicable and related sections using sealants that may be in direct contact with work of this section.
2. Take all required steps and precautions to properly isolate and prevent any degree of incompatibility between sealants, all in strict accordance with Manufacturer's specifications, recommendations and instructions.
3. Contractor is to periodically test sealants in place in addition to the Manufacturer's field testing, for adhesion, using methods recommended by sealant Manufacturer. Promptly replace all sealant that does not adhere or fails to cure.
4. Contractor shall arrange to meet the sealant Manufacturer at the jobsite and witness initial installation of sealant on the project with the Contractor, Architect and other Consultants.

1.4 DELIVERY, STORAGE AND HANDLING
A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.
B. Storage: Adequately protect against damage while stored at the site. Maintain product in accordance with Manufacturer's recommendations with proper precautions to ensure fitness of material when installed.
C. Handling: Comply with Manufacturer's instructions.

1.5 PROJECT/SITE CONDITIONS
A. Environmental Requirements: Observe Manufacturer's temperature service range. Do not apply sealant when weather conditions will inhibit bonding and curing.

1.6 WARRANTY
A. Provide warranty, in writing and signed jointly by the installer and sealant Manufacturer, to replace sealants which fail at no additional cost to the Owner because of loss of cohesion or adhesion, or do not cure, and which fail to achieve air-tight and water-tight seal as follows:
1. Sealant Types "A" and "B": 5 years.
2. Sealant Types "C1" and "C2": 20 years.
3. Sealant Types "D" and "E": 2 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Furnish products of one of the following manufacturers, except as approved otherwise by the Architect, subject to compliance with specifications requirements:
1. Pecora www.pecora.com
2. Dow Corning Corp. www.dowcorning.com
3. General Electric www.ge.com
4. Sonneborn / Chemrex www.chemrex.com
B. Single Source Responsibility for Joint Sealer Materials:
1. Obtain joint sealer materials from a single Manufacturer for each different product required.
2. If sealants from separate Manufacturers must be used and could come in contact with each other, provide written certification from every Manufacturer involved that the sealants are compatible and will adhere to each other.

2.2 MATERIALS
A. General: Sealants, primers, back-up materials, preformed joint fillers, bond breakers

and related materials shall be compatible with adjoining materials.

B. Sealant:
   1. General: The selection of proper sealant for a particular joint shall be in accordance with current published recommendations of the Manufacturer.
   2. Types: See Schedule in Part 3 for the location where each type of sealant is to be provided.
      a. Type "A": Ultra-low modulus, self-leveling, one-component, silicone sealant conforming to ASTM C920, Type S, Grade SL, Class 100/25, Use T, A, M, and O; Dow Corning SL Parking Structure Sealant (Self Leveling), Pecora 300/310 SL, or Tremco Spectrem 900 SL; OR Low-modulus, non-sag, one-component silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 100/25, Use T, A, M, and O. Dow Corning NS Parking Structure Sealant (Non-Sag), Pecora 301/311 NS, or Tremco Spectrem 800; OR Ultra-low modulus, fast-cure, two-component, neutral-cure silicone sealant conforming to ASTM C920, Type S, Grade FC, Class 100/25, Use T, A, M, and O; Dow Corning FC Parking Structure Sealant (Fast Cure). Pavement joint sealants shall comply with Uniform Standard Specifications for Public Works' Construction, Off-Site Improvements, Mohave County, Area, Arizona, latest edition (USSPWC).
      b. Type "B": Silicone sealant conforming to ASTM C920, Type M, Grade NS, Class 25, Use NT, M, A, O, and capable of withstanding movement of 50% in extension and compression, and sustained temperatures of 250 degrees F in service. Dow Corning 790, 795, CCS and CWS.
      c. Type "C-1": One-part low modulus moisture cure silicone rubber sealant conforming to FS TT-S-001543A, Class A, FS TT-S-00230C, Type II, Class A and ASTM C 920, Type S, Grade NS, Class 25, Use NT, M, G, A, and O, and capable of withstanding movement of 100% in extension and 50% in compression in service. Dow Corning 790 Silicone Glazing Sealant or Pecora 890.
      d. Type "C-2": One-part medium modulus neutral cure silicone rubber sealant conforming to FS TT-S-001543A, Class A, FS TT-S-00230C, Type II, Class A and ASTM C 920, Type S, Grade NS, Class 25, Use NT, M, G, A, and O, and capable of withstanding movement of 50% in extension and 50% in compression in service. Pecora 895, Dow Corning 795 or Dow Corning 791 or 756 SMS (non-stainging). Provide Dow Corning 756 SMS where sealant with reduced soiling is indicated.
      e. Type "D": Medium-modulus, single-component, pre-pigmented, neutral- cure silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A, O. Dow Corning 756 SMS Building Sealant.
      f. Type "E": Silicone rubber sealant with mold inhibitor. General Electric Sanitary 1700, Tremco Tremsil 200, Dow Corning 786, Pecora 898, Sonneborn Omni-Plus.
      g. Type "F": Refer to Section 07 92 19.
   3. Sealants at fire penetrations: As specified in Section 07 84 00
   4. Exterior Wall Joint Sealants: As specified in Section 07 91 00.
   5. Sealants at Mechanical Ductwork: As specified in Division 23.
   6. Color: Provide standard or custom colors as selected by Architect. In general, sealant shall be in colors matching the adjacent materials unless specifically noted otherwise on Drawings.

D. Primer: Non-staining type, recommended by sealant Manufacturer to suit application.

E. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant Manufacturer; compatible with joint forming materials.

F. Joint Filler (Backer):

1. Buildings: ASTM C1330, Type B; round bi-cellular or closed cell polyethylene, urethane or neoprene foam rod; oversized 30 to 50 percent; "SofRod" as manufactured by Nomaco.
2. Pavement: ASTM D5249, Type 3, round bi-cellular or closed cell polyethylene, urethane or neoprene foam rod; oversized 30 to 50 percent; "SofRod" as manufactured by Nomaco.

G. Bond Breaker: Pressure sensitive tape recommended by sealant Manufacturer to suit application.

H. Gloss Reducer: Silica sand No. 20, color to match adjacent surface. Gloss reducer shall be provided at traffic sealant applications.

I. Other Materials: Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor and approved by the sealant Manufacturer as compatible, subject to the review by the Architect.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces. Verify, before proceeding with this Work that required inspections of existing conditions have been completed.

B. Coordination: Coordinate with other work which affects, connects with, or will be concealed by this Work.

3.2 PREPARATION

A. Clean, prepare, and prime joints in accordance with Manufacturer's instructions. Remove loose materials, dust, oil, grease, water, surface dirt, frost, old caulking material and other foreign matter which may impair adhesion of sealant.
1. Clean, porous materials where necessary by grinding, sand or water-blast cleaning, mechanical abrading, acid washing or combination of these methods as required to provide a clean, sound base surface for sealant adhesion. Clean nonporous surfaces, either mechanically or chemically.
2. Remove laitance by acid washing, grinding or mechanical abrading. Remove form oils by sand or water-blast cleaning. Remove all loose particles present or resulting from grinding, abrading or blast cleaning by blowing out joints with oil free compressed air or by vacuuming joint prior to application of primer or sealant.
3. Remove protective coatings from metallic surfaces by two rag solvent wipe method. Use clean white cloths or lint free paper towels for cleaning with solvent and drying. Clean joint areas protected with masking tape or strippable film with solvent after removal of tape or film. Do not allow solvent to air dry without wiping.

B. Verify that joint shaping materials and release tapes are compatible with sealant.

C. Examine joint dimensions and size materials to achieve required width/depth ratios.
1. Joint widths, depths, and conditions detailed on shop drawings by related work contractors shall be considered as minimum allowable requirements except where they may conflict with sealant Manufacturer's recommendations. In all cases, joints must be uniform in width. Do not seal joints until they are in compliance with drawings or meet the accepted control section standard. Notify general Contractor and Architect of Conditions not compliant with Drawings or acceptable standards.
2. Clean out and rake to full width and depth, joints to receive sealant, back-up material or preformed joint filler. Make joints of sufficient width and depth to accommodate specified back-up material or preformed joint filler and sealant.

D. Use joint filler to achieve required joint depths, to allow sealants to perform properly.

E. Use bond breaker where required.
F. Protect adjacent surfaces from damage by masking when necessary

3.3 INSTALLATION

A. General:
1. Install sealant in accordance with Manufacturer's instructions.
2. In general, seal openings and other locations which normally require sealant to seal against infiltration from air, water and most insects, including but not limited to:
a. Construction and expansion joints.
b. Joints between dissimilar materials.
c. Joints around windows, door frames, louvers and other penetrations and openings in the exterior wall.
d. Interior wall openings.
e. Other locations indicated on drawings.
3. Follow sealant Manufacturer's instruction regarding surface preparation, priming, application life, and application procedure. Consult sealant Manufacturer for recommendation for application procedure. Apply sealant within recommended temperature ranges. Consult Manufacturer when sealant cannot be applied within recommended temperature ranges. Consult sealant Manufacturer for recommendation for application of silicone sealant when air temperature is below 40 degrees F., or surface temperatures of sealant contact surfaces are above 115 degrees F.
4. Apply masking tape, where required, in continuous strips in alignment with joint edge. Remove tape immediately after joints have been sealed and tooled as directed. Sealant on face of adjacent stone or other materials will not be acceptable.

B. Joints:
1. Free of air pockets, foreign embedded matter, ridges, and sags.
2. Tool joints concave.

C. Apply sealant under pressure with hand or power actuated gun or other appropriate means. Gun shall have nozzle of proper size and provide sufficient pressure to completely fill joints as detailed.

D. Neatly point or tool joint surfaces to provide slightly concave surfaces, free of wrinkles and skips, uniformly smooth and with perfect adhesion along both sides of joint. All joints to be “Dry tooled”. Do not use water-wet tool or tooling solutions.

E. Sealant applied to joints adjacent to mortar joints shall be sanded to achieve texture similar to that of adjacent mortar joint.

F. Sealant applied between EIFS and adjacent aluminum storefront, entrance door frames, hollow metal door frames, wall panels, masonry construction, louvers and vents, and similar items penetrating or adjacent to EIFS shall be applied to the EIFS base coat. Coordinate sealant application with installation of EIFS system.

G. Consult sealant Manufacturer regarding the proper method of installing back-up material or joint filler at proper depth in joint to provide specified sealant dimensions. Compress back-up material 25 to 50 percent into the joints as required. Do not apply sealant without back-up materials. Install bond breaker strip between sealant and non-release type back- up material. Three side adhesion is acceptable only for the sealing at joinery of members that are to be rigidly attached to each other by means of screws or welding restricting all movement.

H. Install back-up rod stock into the joint to avoid lengthwise stretching. Rod stock shall not be twisted or braided. Use bond breaker strip in all joints where sufficient room for back- up does not exist.

I. Surfaces of joints to be sealed must be dry. Do not attempt sealant work on wet surfaces or where frost is present. Consult sealant Manufacturer regarding the procedures for determining acceptable surface conditions.

3.4 CLEANING

A. Clean adjacent surfaces of sealant as work progresses.

B. Use solvent or cleaning agent as recommended by sealant Manufacturer.

C. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises.

3.5 SCHEDULE

A. Expansion and Control Joints:

1. Horizontal traffic (Interior and exterior pavement joint sealant): Type "A". Provide gloss reducer.
2. Joints around exterior windows and doors, exterior columns, louvers, masonry, concrete to concrete, steel, wall penetrations, connections, parapet caps, other joints to seal off building from exterior air and moisture: Type "B".
3. Glass (except insulating glass or special coated glass), aluminum, E.I.F.S., Natural Stone, and plastics: Type "C-1".
4. Glass (including insulating glass or special coated glass), aluminum and plastics: Type "C-2".
5. Porous Stone, Masonry, and Painted Metals: Type "D".

B. Non-expanding Joints:

1. Glass (except insulating glass or special coated glass), Aluminum, E.I.F.S., Natural Stone, and Plastics: Type "C-1".
2. Glass (including insulating glass or special coated glass), Aluminum and Plastics: Type "C-2".
3. Porous Stone, Masonry, and Painted Metals: Type "D".
4. Concrete to Concrete, Stucco, Masonry, Aluminum, Steel, and Wood: Type “C-1".

C. Mechanical (ductwork and air conditioning): Refer to Division 23.

D. Plumbing Fixtures and other Wet Areas (around toilet, bath, kitchen fixtures, and food service equipment): Type "E".

E. Acoustical (acoustical applications where sealant is required): Refer to Section 07 92 19.

F. Exterior Wall Joint Sealants: Refer to Section 07 91 00 (sealants in joints in glazed aluminum systems, exterior metal panel systems, and between these systems and surrounding adjacent materials and finishes).

END OF SECTION

SECTION 08 56 53
TSS BR WINDOWS SERIES - HOLE AND BACKER TALK THRU

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Bullet resistant speak and backer system.

1.2 REFERENCES
A. Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment.
B. ASTM E119-98- Standard Test Methods for Fire Tests of Building Construction and Materials.
C. ASTM B 209/B 209M- Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.
D. ASTM A 666-Standard Specification for Annealed or Cold-Worked Austenitic Stainless-Steel Sheet, Strip, Plate and Flat Bar.

1.3 ACTION SUBMITTALS
A. Refer to Section 01 33 00 Submittal Procedures

1.3.1.1.1 Product Data: For each type of frame [and glass] including manufacturer recommended installation instructions.

1.3.1.1.2 Shop Drawings: Include plans, elevations, sections, details, attachment to other work, anchor locations, reinforcement and locations, and product specifications.

1.3.1.1.3 Samples: For each exposed finish.

1.4 INFORMATION SUBMITTALS
A. Product Test Reports: Indicating compliance with requirements.

1.3.1.1.4 Warranty: Sample of finish warranty

1.5 CLOSEOUT SUBMITTALS
A. Refer to Section 01 77 00 Closeout Procedures
B. Maintenance data.

1.6 DELIVERY, STORAGE AND HANDLING
A. Refer to Section 01 60 00 Product Requirements
B. Deliver materials to the project site with the manufacturer's UL Listed Labels intact and legible. Handle the materials with care to prevent damage. Store materials inside and under cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations provided by manufacturer. Do not install products stored in conditions outside manufacturer's recommended limits.

1.7 WARRANTY
A. Workmanship Warranty: All materials shall be warranted against defects for a period of 1 year for the date of receipt at the project site. Provide certificates of manufacturer's standard limited warranty with closeout documents.
B. Finish Warranty: Manufacturer's warranty against deterioration of factory finishes for the period of 5 years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Basis of Design:

1. Subject to compliance with requirements, provide products by the following:
   a. Total Security Solutions, Inc., 935 Garden Lane, Fowlerville, MI 48836, 866-734-6277. Attn: Sales Department, sales@tssbulletproof.com. Web: www.tssbulletproof.com.
2. Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with Section 01 25 00 Substitution Procedures

B. Design Performance:

1. Through the design, manufacturing techniques and material application, the TSS Bullet Resistant Speak Hole and Backer System shall provide single or multiple transaction positions utilizing the “Speak Hole and Backer Window” configuration. This design shall employ backers in teller line ballistic glazing to complete the “Speak Hole and Backer” design.
2. Each transaction position may have a stainless steel dip tray as shown on the drawings.
3. Components must be manufactured in strict accordance with the specifications, design and details.
4. All vision panels shall be cut to size with all exposed edges polished. Necessary holes shall be pre-drilled and tapped where required.
5. Stainless Steel assembly screws and acrylic spacers shall be provided.
6. Frame and channel shall be provided.
7. Provide anchor screws as required to install equipment.

C. Field alterations to the construction of the assembly fabricated under the acceptable standards are not allowed unless approved in writing by the manufacturer and the Architect.

D. Standard manufacturing tolerances +/- 1/16" shall be maintained.

E. Materials shall meet or exceed UL 752 requirements.

2.2 PERFORMANCE CRITERIA

A. Ballistic Resistant:

1. Level **2** in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing, glazing and panels.

2.3 FABRICATION

A. Aluminum sections to be manufactured in accordance with ASTM B209, Extruded aluminum alloy 6063 T5 Anodized to match the existing décor and be free of sharp edges or burrs when in place.

B. Glazing Channel: U-Channel specifically designed for securing transparencies tightly in place. Angles and stops are only acceptable for top attachment. All exposed aluminum edges shall be clean cut and have no burrs. Exposed corners shall be rounded and sanded.

C. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members

2.4 FRAME FINISH

A. Factory-applied finish:

1. **Clear Anodic Finish**: Architectural Class I, clear coating AA-M10C22A41 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum"

B. Cap the bottom of glazing with the corresponding finish material selected for frame.

2.5 GLAZING

A. Glazing shall be as shown on the drawings or as specified separately in 08 88 53 Security Glazing
   1. Bullet Resistant Level 2
      1" LP 1000 Laminated1" All Poly 1000
      1” All Poly 1000
      1 3/8” Uncoated Acrylic
      1 3/8" AR Coated Acrylic
      1.05” TSS-002 L/S Glass Clad
B. Acrylic: All acrylic pieces shall meet or exceed UL 752 testing for ballistic integrity. All edges of acrylic shall be filed, sanded after cutting to remove rough edges and then polished until “water clear” transparent. All through holes for fasteners shall be 3/8” in diameter and be drilled clean. Chipped edges at through-hole exit points are not acceptable. All acrylic pieces shall be supported in the proper glazing channel designed for this purpose.
C. Glazing gaskets:
   1. Interior: Closed cell neoprene.
   2. Exterior: Solid neoprene.

2.6 ACCESSORIES

A. Anchors: Fully concealed manufacturer recommended.
B. Mounting plates and connecting clips shall be fabricated from 1/8” thick clear polycarbonate.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to beginning installation, verify that all supports have been installed as required by the Contract Documents and architectural drawings, and Shop Drawings have been approved.
B. Notify Architect of any unsatisfactory preparation that is responsibility of others.
C. Clean and prepare all surfaces per manufacturers recommendations as required for achieving the best results for the substrate under the project conditions.
D. Verify field dimensions of openings prior to fabrication of framing.
E. Coordinate structural requirements to ensure proper attachment and support.
F. Do not begin installation of material until all unsatisfactory conditions have been resolved and approved by Architect.

3.2 INSTALLATION

A. Do not begin installation until openings have been verified and surfaces properly prepared in accordance with Drawings.
B. Install in accordance with manufacturer’s instructions and UL 752. Set all equipment plumb.
C. All products shall be installed per installation instructions provided by manufacturer.
D. Security window units shall arrive on site completely prefabricated to field dimensions approved by Shop Drawings.
E. Install framing and secure to structure in accordance with manufacturer's recommendations and approved shop drawings.
F. Provide required support and securely fasten and set windows plumb, square, and level without twist or bow.
G. Apply sealant in accordance with window and sealant manufacturer's recommendations as indicated in installation instructions.
H. Remove excess sealant and leave exposed surfaces clean and smooth

3.3 PROTECTION

A. Clean and protect windows from damage during ongoing construction operations. If damage occurs, remove and replace as required to provide windows in their original, undamaged condition.

B. Inspection and Cleaning: Verify installation is complete and complies with manufacturer's requirements.
C. Provide final cleaning of product and accessories, removing excess sealant, labels and protective covers.
D. Touch-up, repair or replace damaged products prior to Substantial Completion.

END OF SECTION

SECTION 08 71 63
DETENTION DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Sliding hardware mechanism and locks for Jail Facility Doors.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each type of sliding mechanism and lock including materials and finishes and installation details.
B. Shop Drawings: Submit Drawings showing sizes, door construction, proposed locations, fabrication and installation details, and relationship with and attachment to wall/ceiling construction where installed.
C. Samples: Minimum 3 inch x 5 inch Samples of each face material.

1.3 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.
B. Storage and Protection: Deliver and store items in dry, protected areas. Adequately protect against damage while stored at the site.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steel Doors Sliding Hardware and Components: Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements:
1. AirTeq www.airteq.com

PART 3 EXECUTION

3.1 INSTALLATION

A. Install sliding mechanism and locks in accordance with Manufacturer's directions.

3.2 CLEANING

A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition.

END OF SECTION

SECTION 08 88 53
SECURITY GLAZING

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Bullet resistant laminated polycarbonate all poly security glass.

1.2 REFERENCES
A. Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment.
B. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.

1.3 ACTION SUBMITTALS
A. Refer to Section [01 33 00 Submittal Procedures] [Insert section number and title].
B. Product Data: Including manufacturer recommended installation instructions.
C. Shop Drawings: Include plans, elevations, sections, details, attachment to other work.
D. Samples: For each exposed glazing type.

1.4 INFORMATION SUBMITTALS
A. Product Test Reports: Indicating compliance with requirements
B. Warranty: Sample of warranty

1.5 CLOSEOUT SUBMITTALS
A. Refer to Section 01 78 00 Closeout Submittals
B. Maintenance data.

1.6 DELIVERY, STORAGE AND HANDLING
A. Refer to Section 01 60 00 Product Requirements.
B. Deliver materials to the project site with the manufacturer's UL Listed Labels intact and legible. Handle the materials with care to prevent damage. Store materials inside and under cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations provided by manufacturer. Do not install products stored in conditions outside manufacturer's recommended limits.

1.7 WARRANTY
A. Workmanship Warranty: All materials shall be warranted against defects for a period of 1 year for the date of receipt at the project site. Provide certificates of manufacturer's standard limited warranty with closeout documents.
B. Finish Warranty: Manufacturer's warranty against deterioration of factory finishes for the period of 1year from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS
A. Basis of Design:
1. Subject to compliance with requirements, provide products by the following:
a. Total Security Solutions, Inc., 935 Garden Lane, Fowlerville, MI 48836, 8866 734-6277. Attn: Sales Department, sales@tssbulletproof.com. Web: www.tssbulletproof.com.
2. Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with Section 01 25 00 Substitution Procedures

2.2 BULLET RESISTANT ALL GLASS GLAZING

A. Through the design, manufacturing techniques and material application the TSS Bullet Resistant Polycarbonate Laminated All Poly glazing shall be constructed of polycarbonate core with additional 1/8” polycarbonate layers on each side of glazing.
B. UL Standard 752 rating shall be Level 3.
C. Thickness of glass shall range from 3/4” to 1-1/4” thick.

2.3 FABRICATION
A. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members

2.3 GLAZING
A. Product shall meet UL Standard 752 rating level 2.
1. [TSS Polycarbonate LP shall be All Poly 1000 – Level 2, light transmission of 79% with thickness of 1”.]
B. Glazing gaskets:
2. Interior: Closed cell neoprene.

PART 3 - EXECUTION

3.1 PREPARATION
A. Prior to beginning installation, verify that areas have been prepared as required by the Contract Documents and architectural drawings, and Shop Drawings have been approved.
B. Notify Architect of any unsatisfactory preparation that is responsibility of others.
C. Clean and prepare all surfaces per manufacturers recommendations as required for achieving the best results for the substrate under the project conditions.
D. Do not begin installation of material until all unsatisfactory conditions have been resolved and approved by Architect.

3.2 INSTALLATION
A. Do not begin installation until areas have been verified and surfaces properly prepared in accordance with Drawings.
B. Install in accordance with manufacturer’s instructions and UL 752. Set all equipment plumb.
C. Apply sealant in accordance with manufacturer's recommendations as indicated in installation instructions.
D. Remove excess sealant and leave exposed surfaces clean and smooth.

3.3 PROTECTION
A. Clean and protect material from damage during ongoing construction operations. If damage occurs, remove and replace as required to provide voice ports in their original, undamaged condition.
B. Inspection and Cleaning: Verify installation is complete and complies with manufacturer’s requirements.
C. Provide final cleaning of product and accessories, removing excess sealant, labels and protective covers.
D. Touch-up, repair or replace damaged products prior to Substantial Completion.

END OF SECTION

SECTION 09 29 00
GYPSUM BOARD

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Gypsum board and installation accessories as shown on Drawings and as specified herein.

1.2 SYSTEM DESCRIPTION

A. Acoustical Attenuation for Interior Partitions: Comply with STC rating indicated for Partition Types indicated on Drawings and in accordance with ANSI/ASTM E90.

1.3 SUBMITTALS

A. Product Data: Submit data on gypsum board, joint, finish and accessories.
B. Samples: Submit two (2) samples, minimum 8 inches long each, of each type of decorative reveal, edge trim, wall cap with acoustical gasket, and textured finishes specified.
C. Reports: Submit fire test report for fire rated assemblies and acoustical performance test reports for acoustically-rated assemblies.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in Gypsum Board Systems Work with 2 years documented experience and approved by Manufacturer.
B. Regulatory Requirements: Conform to applicable code for fire rated assemblies as shown on the Drawings.
C. Comply with applicable specification recommendations of GA-216 and GA-600 as published by the Gypsum Association.

1.5 DELIVERY, STORAGE AND HANDLING

A. Comply with GA-216 and Manufacturer's directions.

1.6 PROJECT CONDITIONS

A. Environmental Requirements:
   1. Maintain temperature of installed gypsum board spaces in range of 55 degrees F. to 90 degrees F. until building is entirely closed, in accordance with Gypsum Association GA-220 and GA 236.
   2. Ventilate as required to eliminate excessive moisture.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements:
   1. Georgia-Pacific Gypsum (GP) www.buildgp.com
   2. Gold Bond Building Products Div., National Gypsum Co. www.nationalgypsum.com
   3. United States Gypsum Co. www.usg.com
   4. CertainTeed (BPB Gypsum) www.bpb-na.com
   5. Pabco Gypsum www.pabcogypsum.com

2.2 GYPSUM BOARD MATERIALS

A. Standard Gypsum Board: ANSI/ASTM C36 or ASTM C1396; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges. Provide sag-resistant type for

ceiling applications.

B. Fire Rated Gypsum Board: ANSI/ASTM C36 or ASTM C1396; fire resistive type, UL rated; 5/8 inch, maximum permissible length; ends square cut, tapered edges. Provide sag-resistant type for ceiling applications.

C. Moisture Resistant Gypsum Board: DensArmor Plus Interior Guard moisture, mold and mildew resistant coated glass mat faced gypsum core panels complying with ANSI/ASTM C630 or ASTM C1177, and resistant to mold and mildew per ASTM D3273, as manufactured by G-P Gypsum Corporation; 5/8 inch thick, maximum permissible length; tapered edges. Provide DensArmor Plus Fireguard, 5/8 inch panels where indicated.

D. Flexible Gypsum Board: ANSI/ASTM C36; 1/4 inch thick, maximum permissible length; ends square cut, tapered edges. Provide Gold Bond 1/4 inch High Flex Wallboard, or as approved.

E. Glass-Matt Faced Exterior Gypsum Sheathing Board: As specified in Section 09 29 13 – Exterior Gypsum Sheathing.

F. Shaft Wall: As specified in Section 09 21 19 – Gypsum Board Shaft Wall Assemblies.

G. Ceramic Tile Backer Board: As specified in Section 09 30 13 - Ceramic Tile.

2.3 ACCESSORIES

A. Adhesive: ASTM C557.

B. Acoustical Sealant: As specified in Section 07 92 19 – Acoustical Sealants.

C. Corner Beads: GA216; Type CB; electro-galvanized steel.

D. Edge Trim: GA216; Type L or J bead; electro-galvanized steel and Type LC rolled-formed zinc. Milcore No. 66 J-metal edge, or as approved by Architect, where indicated at unfinished gypsum board edges against other finish materials.

E. Control Joint: No. 093, roll-formed zinc, as manufactured by U.S.Gypsum, Unimast, or Dietrich.

F. Wall End Caps: Aluminum break metal wall end cap formed from break metal specified in Section 08 44 13. Form to tightly fit finished wall thickness shown, with leg lengths as detailed, finish to match specified aluminum window wall.

G. Resilient Acoustical Gaskets (Gypsum Board Wall to Exterior Aluminum Window Wall Interface Gasket): “Acousti-Gasket” acoustical gasket tape, viscoelastic cellular rubber reinforced with solid rubber particles bonded to cellulose with peel and stick back, 5/16 inch thick x 1-1/2 inch width, as manufactured by Acoustical Surfaces, Inc. www.acousticalsurfaces.com

H. Joint Materials: ANSI/ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners. For coated board and gypsum sheathing, use material recommended by Board Manufacturer.

1. Use 2 inch wide 10 x 10 glass mesh tape at moisture resistant gypsum board.
2. Use only setting type joint compound at moisture resistant gypsum board.

I. Screws: ASTM C1002 for steel drill screws. Type G for fastening to gypsum board, Type S for fastening to light gauge steel framing and Type W for fastening to wood framing.

J. Wall Texture: As manufactured by USG, multi-purpose, pre-packaged, non-asbestos type.

K. Drywall Primer:

1. Paint material specifically formulated to fill the pores and equalize the suction difference between gypsum board surface paper and the compound used on finished joints, angles, fastener heads and accessories and over skim coatings.
2. Drywall primer which is applied to the finished surface of the work specified in this section shall be provided as specified under Sections 09 90 00 as applicable.
3. A good quality, white latex drywall primer formulated with high binder solids, applied undiluted, and shall be applied to gypsum board surfaces prior to the application of texture materials.

L. Drywall Primer-Surfacer: Acceptable products:
   1. Sheetrock brand Tuff-Hide primer surfacer, USG Corporation www.usg.com
M. Expanded Metal Security Mesh: As specified in Section 05 50 00.
N. Acoustical Putty/Pads: Lowry's electrical box pads, Harry A Lowry & Associates www.halowry.com

PART 3 EXECUTION

3.1 INSPECTION
A. Verify that site conditions are ready to receive Work and opening dimensions are as instructed by the Manufacturer.
B. Beginning of installation means acceptance of substrate.

3.2 GYPSUM BOARD INSTALLATION
A. Install gypsum board in accordance with GA-201, GA-216, and ASTM C840 and Manufacturer's instructions as applicable.
B. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
D. Ceiling Boards:
   1. Install gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
   2. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
E. Use screws when fastening gypsum board to metal framing.
F. Double and Multi-Layer Applications:
   1. Place first layer perpendicular to framing or furring members.
   2. Use fire rated gypsum board for fire rated partitions.
   3. Place second layer perpendicular to first layer.
   4. Offset joints of second layer from joints of first layer.
   5. Do not glue laminate. Screw successive layers of wallboard to framing members only; use screws of sufficient length to penetrate framing members and assure a permanent solid connection thereto.
G. Flexible Gypsum Board - Double Layer Application:
   1. Apply stop to one end of the concave curved wall to resist strain.
   2. Apply pressure to the unrestrained end of the board forcing the field of the gypsum board into firm contact with the framing.
   3. Fasten gypsum board working from the "stopped" end or edge.
   4. Hold gypsum board in firm contact with framing members while fastening.
   5. Offset joints of second layer from joints of first layer.
   6. Secure second layer through first layer to framing in same manner as first layer.
H. Direct Bonding To CMU or Concrete: Where gypsum board is indicated to be applied directly to CMU or concrete wall substrate, comply with gypsum board Manufacturer's recommendations for application of adhesive, and temporarily brace or fasten gypsum panels until fastening adhesive has set.

I. Expanded Metal Security Mesh: Install expanded metal security mesh over first layer of gypsum board with security type attachment clips at a maximum of 12 inches center to center at each stud location. Adjacent panels shall be staggered and butted over stud location.
J. Treat cut edges and holes in moisture resistant gypsum board with sealant.

K. Place control joints consistent with lines of building spaces as indicated on Drawings and as recommended by Board Manufacturer.

L. Gypsum Board Wall to Aluminum Window Wall Interface: Install wall end caps and acoustical gasket tape at interface with vertical mullion of exterior window wall to assure acoustical seal.

1. Remove release paper from acoustical gasket tape and adhere to wall end cap vertically centered on aluminum window wall vertical mullion. Install tape in continuous one-piece length without gaps.
2. Install end cap tight against mullion with acoustical gasket compressed.
3. Assure cap is installed plumb and centered on mullion, or as otherwise shown on Drawings.
4. Install metal stud wall framing specified in Section 09 22 16 and gypsum board panels as specified herein, with gypsum board wall construction tightly fitted to installed end cap.
5. Install acoustical sealant as specified below in addition to acoustical gasket tape to assure acoustical seal at wall interface with aluminum window wall.
6. Alternate construction method may be used provided acoustical gasket and end caps are installed tight to aluminum window wall frame as detailed.

M. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials. Use J-metal edge where indicated at unfinished gypsum board edges against other finish materials.

3.3 JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

C. Taping, filling, and sanding is not required at surfaces behind ceramic tile.

3.4 ACOUSTICAL WALLS AND TREATMENT

A. Install gypsum board in accordance with manufacturer's requirements to achieve required acoustical design rating at ceiling and walls. All gypsum board shall be screwed. Nailing of gypsum board will not be accepted.

B. Vertical and Horizontal Application: Gypsum drywall shall be applied with the long edge parallel to the framing members. All joints shall occur over framing members. Screw edge and field spacing shall be in accordance with the drywall manufacturer's recommendations. All screws shall penetrate studs or resilient channels, as shown. The number and type of screws used by the manufacturer to meet requirements shall be used by the Contractor.

C. Multiple Layers: Where multiply layers of gypsum wallboard occur, do not glue laminate. Screw successive layers of wallboard to framing members only; use screws of sufficient length to penetrate framing members and assure a permanent solid connection thereto.

D. Staggered Joints: Stagger all joints of gypsum drywall where multiple layers occur. Minimum distance between joints of staggered layers shall be equal to the typical distance between framing members.

E. Taping and Finishing: Where single layer of gypsum wallboard occurs, tape all joints. Where multiply layer of wallboard occur, tape outer joints only. Fire tape outer layer only of all gypsum wallboard above the ceiling line. All taping and finishing shall be executed in accordance with the drywall manufacturer's recommendations.

F. Mechanical Contact Between Wall Sections: When more than one set of studs is used in a partition, there shall be no mechanical or structural contact between the various partition wall sections, except as indicated in the Drawings.

G. Wall Penetrations: Avoid all wall penetrations wherever possible. Any unavoidable penetrations of the gypsum wallboard by piping, conduits, ducts, etc. shall be done in accordance with the Drawings and in such a manner as to maintain the sound and vibration control characteristics inherent in the basic wall or ceiling being penetrated.

H. Gypsum board gaps at the base, head and sides of the wall shall be no greater than 1/4 inch.

I. Install acoustical sealant in accordance with Manufacturer's instructions and Section 07 92 19.

J. Install acoustical sealant at gypsum board perimeter at:
   1. Metal framing: Two beads.
   2. Base layer of double layer applications, if applicable.
   3. Face layer.
   4. Seal all around all gypsum board penetrations by conduit, pipe, ductwork, and rough-in electrical/telephone boxes, etc.

K. Install acoustical sealant where gypsum board joins other walls or surfaces at sound control partitions.

L. Provide acoustical putty or putty pads around all electrical boxes and other penetrating items in all acoustically rated walls or walls with acoustical insulation as detailed.
   1. Clean electrical boxes and other surfaces to receive acoustical putty or putty pads in accordance with Manufacturer's instructions prior to application.
   2. Place and mold material completely around back and side of box and fold around conduit entering box.

3.5 FINISHING OF GYPSUM BOARD SURFACES

A. Provide finish of gypsum board surfaces in accordance with the Gypsum Association "Recommended Specification: Levels of Gypsum Board Finish" as follows as noted on Room Finish Schedule:
   1. Level 0 (Temporary Construction): No taping, finishing, or accessories required.
   2. Level 1 (Fire Taping at plenum areas above ceiling, in attics, in areas where the assembly will be concealed or in building service corridors and other areas not normally open to public view):
      a. Joints and interior angles shall have tape embedded in joint compound.
      b. Surface shall be free of excess joint compound.
      c. Tool marks and ridges are acceptable.
   3. Level 2 (Water resistant gypsum backing for tile) (Areas to receive ceramic, stone or glass tile, stone wall panels, applied wall panels, wood paneling, applied products, etc., except where product being installed requires a higher level of finish.):
      a. Joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating joint compound over joints and interior angles.
      b. Fastener heads and accessories shall be covered with a coat of joint compound.
      c. Surface shall be free of excess joint compound.
      d. Tool marks and ridges are acceptable.
      e. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
   4. Level 3 (Utility, Equipment, Mechanical, Janitor Rooms, and Similar Spaces) (Appearance areas to receive heavy or medium texture (spray or hand applied) finishes before final painting, or where heavy grade wallcoverings are to be applied as final decoration. This level of finish is not to be used where smooth painted surface or light to medium wallcoverings are to be applied.):
      a. Joints and interior angles shall have tape embedded in joint compound and one additional coat of joint compound applied over joints and interior angles.
      b. Fastener heads and accessories shall be covered with 2 separate coats of joint compound.
      c. Joint compound shall be smooth and free of tool marks and ridges.
      d. Surface to be coated with Drywall Primer as specified herein prior to

application of texture.
e. Untextured surfaces to be coated with Drywall Primer prior to application of final finishes as specified in Sections 09 91 00 as applicable.

5. Level 4: Typical finish for all BOH, Office, and Similar Employee areas unless otherwise indicated on Drawings or indicated to receive gloss or semi-gloss paints. (Appearance areas to receive flat paints, light texture, or where backed wall coverings are to be applied. This level of finish is not to be used where gloss, semi-gloss and enamel paints are to be applied):
   a. Joints and interior angles shall have tape embedded in joint compound and 2 separate coats of joint compound applied over flat joints and one separate coat of joint compound applied over interior angles.
   b. Fastener heads and accessories shall be covered with 3 separate coats of joint compound.
   c. Joint compound shall be smooth and free of tool marks and ridges.
   d. Surface to be coated with Drywall Primer as specified herein prior to application of texture.
   e. Untextured surfaces to be coated with Drywall Primer prior to application of final finishes as specified in 09 90 00 as applicable.
6. Level 5: (Typical finish for all Casino, Restaurants, Bars, Food Courts, Retail, Hotel Lobby, Guestrooms and Suites, Spa, and similar public spaces unless otherwise indicated. (Apearance areas to receive gloss, semi-gloss, enamel, or non-textured flat paints where severe lighting conditions occur):
   a. Joints and interior angles shall have tape embedded in joint compound and 2 separate coats of joint compound applied over flat joints and one separate coat applied over interior angles.
   b. Fastener heads and accessories shall be covered with 3 separate coats of joint compound.
   c. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface to fill imperfections in the joint work, smooth the paper texture and provide a uniform surface for decorating. Excess compound shall be immediately sheared off, leaving a film of skim coating compound completely covering the paper.
   d. The surface shall be smooth and free of tool marks and ridges.
   e. Surface to be coated with Drywall Primer as specified herein prior to application of texture.
   f. Untextured surfaces to be coated with Drywall Primer prior to application of final finishes as specified in Sections 09 90 00 as applicable.

B. Level 5 Option: A drywall primer-surfacer may be used in lieu of a skim coat level 5 of joint compound and paint primer.
   1. Prepare wall surface to a level4 finish.
   2. Spray apply the drywall primer-surfacer over the entire surface after joints have been properly treated to the level 4 finish.
   3. Apply the primer-surfacer at a thickness and method per Manufacturer's recommendations.

C. Surfaces shall be free of dust, dirt and oil and shall received Drywall Primer before application of texture or skim coat as required by the manufacturer of the texture or skim coat materials.

D. Surface Finish: Produce surface finish to match approved sample, type as indicated below.
   1. Casino, Restaurants, Bars, Food Courts, Retail, Hotel Lobby, Guestrooms and Suites, Spa, and similar Public Spaces: Smooth finsh typical, unless otherwise

indicated to receive textured and/or specialty finishes as indicated on Interior Drawings and Specifications.

2. Back-of-House, Offices, Mechanical, Utility, equipment, Janitor Rooms and Similar Areas: Light knock-down or medium orange peel texture as approved by Architect, unless otherwise indicated on Drawings.

E. Do not wash joint compound or wall finish materials down site drains.

3.6 CLEANING

A. After completion of wallboard installation, taping and texturing, remove rubbish, excess material and equipment from building and job site, leaving floors and other surfaces clean.

B. Remove overspray from adjoining construction.

C. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition.

3.7 PROTECTION

A. Protect Work from damage until acceptance.

B. Repair or replace damaged Work.

END OF SECTION

SECTION 09 30 13
CERAMIC TILE

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE
A. Gypsum Drywall Systems - Section 09 29 00.

1.02 QUALITY ASSURANCE
A. Install tile, trimmers, and grout in accordance with applicable installation methods as described in the "Tile Council of America Handbook for Ceramic Tile Installations".

1.03 SUBMITTALS
A. Complete list of materials and methods intended for use.
B. Sample of tile for color and finish.

1.04 DELIVERY, HANDLING AND STORAGE
A. Deliver, store and handle materials to prevent inclusion of foreign matter and/or water to prevent damage.
B. Material shall be delivered to job site in manufacturer's unopened containers.

1.05 EXAMINE SURFACES TO RECEIVE TILE
A. All surfaces to be dry, clean, free of oil or waxy films, firm, level and plumb. Do not proceed until satisfactory provisions have been made.

1.06 STARTING OF WORK
A. Starting of work will imply acceptance of surfaces to receive tile within the limits established in the Specification section.

1.07 CONDITIONS
A. Tile shall be installed only when weather and/or building temperature is 50 degrees F or above. Adhesives used at lower temperatures shall only be allowed with manufacturer's specific instructions.

PART 2 - PRODUCTS

2.01 BOND COAT
A. Sand - Portland Cement Mortar with HYDROMENT Acrylic Latex or Mortar Admixture or approved equal.

2.02 GROUT
A. Sand - Portland Cement Grout with HYDROMENT Acrylic Latex Grout Additive or approved equal.

2.03 CERAMIC TILE
A. WALL TILE: At locations shown, tile to be 3” x 6”, Subway tile, color Artic White, finish matte as manufactured by Daltile or approved equal.
B. FLOOR TILE: tile to be 12” x 24”, Reminiscent, color Reclaimed Gray, as manufactured by Daltile or approved equal by owner.
C. SHOWER FLOOR TILE: tile to be 24” x 24”, Rekindle Style, color Medium Gray or approved equal by owner.

PART 3 - EXECUTION

3.01 GENERAL
A. Install wall tiles in accordance with the Tile Council of America Installation Method

W243-18. Comply with applicable parts of ANSI 108 Series of tile installation. Consult with product manufacturers for specific instructions.

B. Install floor tile in accordance with the Tile Council of America Installation Method F113-18. Comply with applicable parts of ANSI 108 Series of tile installation. Consult with product manufacturers for specific instructions.

3.02 PROTECTION

A. Leave finished installation free of cracked, chipped broken, unbonded or otherwise defective tile work.

END OF SECTION

SECTION 09 65 13
RUBBER BASE

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and services necessary for the complete installation of all rubber wall base and moldings as shown on the Contract Drawings.

B. Related work in other areas.

1. Cast-in-Place Concrete – Section 033000.
2. Sealant and Caulking – Section 079200.
3. Gypsum Board – Section 092900.
4. Carpet – Section 096800.
5. Paint – Section 099000.
6. Plastic Faced Casework – Section 123416.

1.02 REFERENCES

A. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

B. ASTM E648 – Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.

C. ASTM E662 – Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

D. ASTM F137 – Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus.

E. ASTM F386 – Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces.

F. ASTM F925 – Standard Test Method for Resistance to Chemicals of Resilient Flooring.

G. ASTM F1515 – Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change.

H. ASTM F1861 – Standard Specification for Resilient Wall Base.

1.03 SUBMITTALS

A. Submit copies of manufacturer's product data and installation instructions for each type of accessory required. Include copies of Material Safety Data Sheets (MSDS) for all adhesives to be used. Submittal must state VOC emissions for each adhesive to be installed.

B. Submit samples for each type, color, style and finish of accessories. Sample submittal reviewed for color, texture and pattern only.

C. Submit certified test reports showing compliance with specified performance characteristics and physical properties.

D. Submit manufacturer’s maintenance data for installed products, including methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.

E. Submit manufacturer’s warranty documents.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Installer experienced in performing work of this Section who has specialized in installing work similar to that required for this project.

B. Obtain resilient wall base and manufacturer’s recommended adhesive from a single manufacturer and supplier.

1.05 DELIVERY, HANDLING AND STORAGE

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store materials protected from exposure to harmful weather conditions and acclimated to site conditions at temperature and humidity conditions recommended by the manufacturer.

1.06 PROJECT CONDITIONS

A. In accordance with the manufacturer's recommendations, areas to receive wall base shall be clean, fully enclosed, weather tight with permanent HVAC set at a uniform temperature of 65-85°F for 48 hours prior to, during, and after installation is completed. Wall base and adhesive shall be conditioned in the same manner.

B. Wall base must be unboxed and acclimated in area of use at least 48 hours prior to installation.

C. Minimum temperature shall be 85°F after installation.

1.07 WARRANTY

A. Submit for Owner's acceptance the manufacturer's standard warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.

1. Warranty Period: One (1) year limited warranty commencing on date of Substantial Completion. Notice of any defect must be made in writing to the manufacturer within thirty (30) days after buyer learns of defect.
2. Limited Wear Warranty: Three (3) year limited wear warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Rubber wall base and accessories shall be as manufactured by Mohawk Group, 160 South Industrial Blvd., Calhoun, Georgia, 30701, (800) 554-6637, or approved equal.

B. The following are approved manufacturers.

1. Armstrong World Industries, Inc.
2. Johnsonite, Inc.

2.02 MATERIALS

A. Provide 4" high thermoplastic rubber formulation designed specifically to meet the performance and dimensional requirements of ASTM F1861, Type TP, Group 2 (layered), Style A

1. Thickness: 0.080".
2. Hardness: 90 +/- 5, Shore A durometer per ASTM D2440.
3. Flexibility: Will not crack, break, or show any signs of fatigue when bent around a 1/4" diameter cylinder.
4. Meets or exceeds the performance requirements for resistance to heat/light aging, chemicals, and dimensional stability when tested to the methods as described in ASTM F1861.
5. Flame Spread Index: 200 per ASTM E84.
6. Smoke Developed Index: 355 per ASTM E84.
7. Profile: Straight and coved, with inside and outside corners.
8. Color: Night Skies #002 or approved equal by owner.
9. Style: CRW03, 120' roll

B. Adhesives: Provide waterproof adhesive as recommended by wall base

manufacturer.

PART 3 – EXECUTION

3.01 PREPARATION

A. The installation area, unboxed wall base and adhesive are to be maintained between 65-85°F for at least 48 hours before installation, during installation, and thereafter. If installing rubber roll base, it should lay flat for 24 hours before application.

B. Examine substrate against which the rubber base is to be installed. Notify Contractor in writing of conditions detrimental to proper and timely completion of the work. Do not proceed until satisfactory conditions have been met.

C. Make sure that the wall surface is clean, dry, and free of dust, dirt, and loose paint, and all other foreign material which may affect proper adhesive bonding. Drywall seaming compound must be smooth.

1. Conduct bond test at least 72 hours prior to the scheduled installation to ensure surface is suitable, with no extreme difficulty in removing the wall base from the surface.

D. Provide caulking bead at all exterior wall/floor intersections prior to installation of rubber base.

3.02 INSTALLATION

A. Install rubber wall base and moldings in accordance with the manufacturer's installation instructions.

B. Butt ends firmly together so that the top of the base fits tightly against the wall. Do not stretch the wall base during installation.

3.03 FIELD QUALITY CONTROL

A. Upon Owner's request, and with minimum 72 hour notice, provide manufacturer's field service consisting of product use recommendations and periodic site visits to confirm installing of product is in accordance with the manufacturer's instructions.

3.04 CLEANUP

A. Remove any excess adhesive or other surface blemishes from base, walls and flooring using neutral type cleaners recommended by manufacturer. ENSURE THAT CLEANER DOES NOT DAMAGE ADJACENT WORK. Protect installed work from damage.

B. All-purpose cleaners/disinfectants must be cleaned off the base before drying to prevent staining. Base should be wiped off with a soft cloth or sponge moistened with clean water.

C. After completion of the project and prior to final inspection, thoroughly clean accessories in compliance with manufacturer's instructions.

3.05 MAINTENANCE

A. Rubber wall base can be routinely cleaned by wiping with a soft cloth dampened

with warm water. If desired, a paste or acrylic wax can be applied.

B. Coarse cleaning materials and/or harsh cleaning agents may damage the surface of the base.

C. Deliver to the Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.

1. Furnish quantity of wall base equal to 5% of amount installed.

END OF SECTION

SECTION 09 65 16
LUXURY VINYL TILE

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and services necessary for the installation of the composition vinyl tile flooring as shown on the Contract Drawings. Work shall include, but is not limited to, flooring, lobby medallion, adhesives, etc.

B. Related work in other areas.

1. Cast-in-Place Concrete - Section 033000.
2. Joint Sealers – Section 079200.
3. Gypsum Board – Section 092900.
4. Wall Base – Section 096513.
5. Carpet – Section 096800.

1.02 SUBMITTALS

A. Submit manufacturer's descriptive literature, installation instructions, design layout, and maintenance data for each type of product indicated. Include VOC content for all adhesives, sealants, and chemical bonding compounds.

B. Submit samples of each type and color or pattern of composition vinyl tile flooring and base material.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this project that are competent in techniques required by the manufacturer for floor tile installation.

B. Mock-Up: Build mock-up, 100 square feet in size, to verify selections made under submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. Installer shall not proceed with the work until mock-up is approved by the Owner.

1.04 DELIVERY, HANDLING AND STORAGE

A. Deliver in manufacturers unopened containers with labels intact.

B. Do not open containers or remove markings until materials are inspected and accepted.

C. Store materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by the manufacturer, but not less than 68°F or more than 72°F. Store materials on flat surfaces.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperature in space to receive composition vinyl tile flooring within range recommended by the manufacturer, but not less than 68°F or more than 72°F for 48 hours prior, during, and 48 hours after installation. Avoid installations with ambient temperatures above 80°F and below 60°F.

B. Maintain ambient temperature within range recommended by the manufacturer, but not less than 58°F or more than 72°F until Substantial Completion.

C. Close spaces to traffic during installation. Close spaces to heavy traffic for 48 hours after installation, and to light foot traffic for 24 hours after installation.

D. Install floor tile after other finishing operations, including painting, have been completed.

1.06 WARRANTY

A. The manufacturer shall warrant first quality tiles and floor planks against wear out for a period of twenty (20) years provided the material is properly installed and maintained and used as intended and recommended. Wear out is defined as a complete removal wear layer/pattern/color due to wear from normal traffic and maintenance. If wear out occurs within 20 years of the date of Substantial Completion, the manufacturer will repair or provide replacement material at no cost to the Owner.

1.07 EXTRA STOCK

A. Deliver to the Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.

1. Furnish quantity of wall base equal to 5% of amount installed for each type of tile installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Luxury Vinyl Tile Manufacturers: Furnish products of one of the specified Manufacturers, except as otherwise approved by the Architect, subject to compliance with Specification requirements.

a. Shaw Contract www.shawcontract.com
b. AB Colors Plus manufactured by American Biltrite. www.american-biltrite.com
c. Armstrong World Industries www.armstrong.com
d. Azrock www.domco.com
e. Mannington www.mannington.com
f. As indicated on Interior Drawings and Specifications.

2.02 MATERIAL

A. Luxury vinyl tile construction is a Class III solid vinyl tile per ASTM F1700, heterogeneous, resilient flooring, with an overall thickness of 0.125" (nominal).

1. Edge Treatment: Square.
2. Critical Radiant Flux, Class I: Greater than 0.45 per ASTM E648.
3. Smoke Density: Less than 450 per ASTM E662.
4. Chemical Reaction: Excellent per ASTM F925.
5. Slip Resistance: ADA compliant, varies with surface texture (FTC slip resistant classified product).
6. Size: 12" x 24"
7. Color: Mortar
8. Style: NA331
9. Collection: Braco

2.03 ACCESSORIES

A. Trowelable Cementitious Leveling and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by the manufacturer for the applications indicated.

B. Adhesives: Water-resistant type recommended by the manufacturer to suit tile and substrate conditions. Adhesives shall be certified to meet GreenGuard limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Floor Polish: Provide Maintenance products as recommended by the manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections, and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of tile.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prepare substrates according to the manufacturer's written instructions to ensure proper adhesion of products.

B. Prepare concrete substrates in accordance with ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by the manufacturer. Do not use solvents.
3. Perform alkalinity and adhesion testing as recommended by the manufacturer. Proceed with installation only after substrates pass testing.
4. Perform moisture testing recommended by the manufacturer. Proceed with installation only after substrates pass testing.

C. Fill cracks, holes, and depressions in substrates with trowelable cementitious leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move products and installation materials into spaces where they will be installed at least 48 hours prior to installation.
2. Room should be controlled by HVAC system at a temperature of between 68°F and 72°F.

E. Sweep and vacuum clean substrates to be covered by flooring products immediately before installation.

3.03 INSTALLATION

A. Comply with manufacturer's written instructions for installing products.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Tile direction to be determined by the Owner.

C. Match floor tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged. Discard broken, cracked, chipped, or deformed tiles.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other non-permanent, non-staining marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion

joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to product a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.04 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of installed products.

B. Perform the following operations immediately after completing floor tile installation.
   1. Remove wet adhesive and other blemishes from exposed surfaces with a damp cloth.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil after 48 hours.

C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Remove soil, visible adhesive, and surface blemishes from floor tile surface using materials and cleaners recommended by the manufacturer.

E. Cover floor tile until Substantial Completion if foot traffic is required immediately.

F. Polish flooring material with products recommended by the manufacturer prior to Substantial Completion.

End of Section

SECTION 09 68 00
CARPET

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and service for the installation of carpet, locations as shown on the Contract Drawings.

B. Related work in other areas.

1. Cast-In-Place Concrete – Section 033000.
2. Sealant and Caulking – Section 079200.
3. Rubber Base – Section 096513.

1.02 QUALITY ASSURANCE

A. Installer's Qualifications:

1. Skilled craftsmen with experience in carpet application.
2. Successful completion of three (3) projects of similar scope and complexity.
3. Installer approved by carpet manufacturer.

1.03 REFERENCES

A. ASTM E84 - Surface Burning Characteristics of Building Materials.

B. NBS Tech. Note 708 (Dec. 1971) - Smoke Chamber Test.

C. NBS Sts. Method of Test (Sept. 1975) - Test for Critical Radiant Flux of Floor Covering Systems using a Radiant Heat Energy Source.

D. American Association of Textile Chemists and Colorists (AATCC) Standard No. 134-1975 - Test Method for Electronic Propensity of Carpets.

1.04 SUBMITTALS

A. Provide copies of the manufacturer's certificates, including the following:

1. Approval of installer.
2. Flame spread and smoke development rating of carpet.
3. Approving method of installation, type of adhesive, crack filler. Include copies of Material Safety Data Sheets (MSDS) for all adhesives to be used. Submittal must state VOC emissions for each adhesive to be installed.
4. Identifying carpet supplied and stating compliance with this specification.
5. Maintenance and cleaning information in accordance with OPERATING AND MAINTENANCE DATA.

B. Provide four (4) copies of the shop drawings, to include the pattern direction and layout, and the location of edge strips.

C. Samples: Provide carpet samples of each color.

1.05 DELIVERY, HANDLING AND STORAGE

A. Identify manufacturing run by manufacturer's system on labels. Include dye lot identification.

B. Deliver materials in original, unbroken packages, containers, or bundles bearing name of manufacturer, complete material identification, brand, and grade.

C. Store in dry ventilated locations. Handle by methods that prevent damage, soiling, and contamination. On delivery of carpet material, bale ticket on each roll shall be recorded by Contractor and delivered to the Owner.

1.06 JOB CONDITIONS

A. Store carpet, and adhesives to be installed at the site for 72 hours before beginning installation.
   1. Temperature: Minimum 65° F.
   2. Relative Humidity: Maximum 65%.

1.07 WARRANTY

A. A written guarantee shall be furnished to the Owner covering materials and workmanship for a period of one (1) year from date of Substantial Completion. The guarantee shall show bale tickets and register numbers for the carpet installed.

PART 2 - PRODUCTS

2.01 ADHESIVE AND CRACK FILLER

A. Shall be as recommended by manufacturer for specific application. Adhesive required not to exceed Volatile Organic Compound (VOC) emission limits as defined in paragraph 2.04 of this Section.

2.02 METAL EDGE STRIPS

A. Shall be metal gripper with vinyl cap insert as manufactured by Roberts, or approved equal.

2.03 SEAMS

A. (Direct Glue) - Carpet shall be pasted directly to the floor using adhesive per manufacturer's recommendations.

2.04 CARPET

A. Carpet manufacturer shall be Mohawk Group, 160 South Industrial Blvd. Calhoun, GA. 30701, (800-554-6637), or approved equal, with the following characteristics:

Carpet 1 (Field Carpet)

Product	Motivated Movement 24x24
Style number	GT465
Yarn	**Duracolor Tricor Premium Nylon** Minimum 51% recycled content Must carry a lifetime stain warranty
Construction	Tufted
Density	6612
Gauge	1/12
Stitches per inch	13
Primary backing	EcoFlex NXT
Sustainability	Minimum 51% total recycled content Product is 100% carbon neutral plus an additional 5% offset
Average yarn weight	18.00 oz/yd2 (678g/m2)
Dye method	100% Solution Dyed
Install Method	Quarter turn, Vertical ashlar, Brick ashlar, Multi-directional.
Electrostatic propensity	AATCC-134, Under 3.5 KV
Flammability	ASTM E648 Class 1 (Glue Down)

Warranty	Lifetime Limited Carpet Tile Warranty, Lifetime Duracolor Stain Warranty, Lifetime Static
Color	565 - Franklin

B. All carpet installed in the building interior shall meet the testing and product requirements of the Carpet and Rug Institute's Green Label Plus program. All carpet adhesive shall meet the requirements for Volatile Organic Compound (VOC) limits: limit of 50 g/L.

1. Project requires Lokdots carpet tile adhesive system. Must be odorless and withstand up to 95% RH.

2.05 CARPET BACKING

A. EcoFlex NXT backing system is a 100% PVC-free recyclable backing system with recycled content, made from thermoplastic polyolefin compound with a fiberglass reinforcing layer.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that concrete slabs and gypsum cement underlayment are completely cured.

B. Ensure that no curing compound is used which would adversely affect carpet adhesives.

3.02 PREPARATION

A. Fill cracks and holes in sub-floors with crack filler. Remove grease, loose particles, dirt and all other foreign substances. Sub-floor shall be level and smooth. Remove dirt from concrete floors by sweeping and wet mopping. Seal concrete as per carpet manufacturer's recommendations.

3.03 INSTALLATION

A. Follow manufacturer's instructions for method of installation, use type adhesive applied as recommended by manufacturer. Follow manufacturer's instructions for matching pattern and texture directions.

B. In any single area use carpet from one dye lot only.

C. Cut and fit carpet where required for installing equipment, pipes, outlets and the like. Replace flanges or plates. Use adhesive in accordance with manufacturer's instructions to anchor carpets around pipes and other vertical projections.

D. Lay carpet uniformly to provide a tight, smooth finish. Carpet shall be free from movement when subjected to traffic.

E. Install with pile inclination in pattern as approved by the Project Manager and the Owner.

F. Extent of Adhesives: Fully adhere the surface at a rate recommended by the manufacturer. Do not apply too much or too little.

3.04 BASE

A. Installed per Section 096513.

3.05 EDGE STRIPS

A. Install edge strips at exposed edges adjacent to uncarpeted finish flooring. Anchor strips to floor with suitable fasteners. Install snug to edge of carpet.

3.06 PROTECTION AND CLEANING

A. Remove spots and smears of adhesive from carpet surface with approved cleaning agents. Remove waste and rubbish. Vacuum carpet and provide suitable protection. Do not permit unnecessary traffic on unprotected carpeted surfaces.

B. Just before final acceptance of work, remove protection and vacuum with a commercial beater-bar-type vacuum cleaner and/or commercial pile-lifter.

3.07 OVERAGE

A. Usable carpet scraps, remnants and overage shall be packed, marked and turned over to the owner. In addition, Contractor shall furnish two (2) boxes of each carpet tile color chosen by the Owner.

3.08 MAINTENANCE

A. Contractor shall provide the Owner with a maintenance manual as prepared by the manufacturer.

END OF SECTION

SECTION 09 77 33
FRP WALL PANELS

PART 1 GENERAL

1.1 SUBMITTALS

A. Product Data: Manufacturer's Specifications and installation instructions for each material and accessory.

B. Submit Manufacturer's full range of color and pattern samples of wall panels and trim pieces for Architect's selection. Submit two samples of selected products.

C. Submit cleaning and maintenance instructions in accordance with Section 01 77 00.

1.2 DELIVERY, STORAGE AND HANDLING

A. Deliver materials clearly labeled to identify Manufacturer, brand name, quality or grade and fire hazard classification.

B. Store horizontally in original undamaged packages.

1.3 PROJECT/SITE CONDITIONS

A. Environmental Requirements: Install materials when temperature and humidity conditions approximate conditions that will exist when building is occupied.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Furnish products of one of the specified Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements.

1. Marlite, Inc., Dover, OH (303) 343-6621 www.marlite.com
2. Crane Composites, Inc. (Kemlite), Channahon, IL (800) 435-0080 www.kemlite.com

2.2 MATERIALS

A. FRP Panels:

Fiberglass reinforced plastic panels complying with the following:

1. Class: Class III (C) FR panels.
2. Thickness: 0.090.
3. Texture: Symmetrix Smart Seam FRP
4. Style: Subway
5. Color: White Panel with white grooves
6. Size: 4’ x 8’ Panels
7. Corner Guard: F560SS Stainless Steel Corner Guard

Fiberglass reinforced plastic panels complying with the following:

1. Class: Class I (A) FR panels.
2. Thickness: 0.090.
3. Texture: Embossed texture.
4. Color: P145 Silver, As indicated on Interior Drawings and Specifications.

B. Adhesive for panel installation: Manufacturer's recommended type for use with selected materials, waterproof, mildew resistant nonstaining type.

C. Edge Sealant: Type "E" clear mildew resistant silicone sealant as specified in Section 07 92 00, or mildew resistant sealant recommended by manufacturer for sealing panel edges and moldings.

D. Moldings: All molding shall be 1-piece vinyl of the following types, color to match FRP.

1. Panel Edges: "J" type Cap molding.

2. Panel to Panel: "H" type Division Bar molding.
3. Inside Corner: "J" type Inside Corner molding with radius edge.
4. Outside Corner: "J" type Outside Corner molding with extended leg.
5. Ceiling: "J" type Ceiling molding with radius edge or use inside corner molding.

E. Fasteners: Manufacturer's standard nylon drive pins.

F. Miscellaneous Items: Furnish and install supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation whether or not specified or indicated.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Examine substrate and conditions under which the material is to be installed.
2. Verify that surfaces, when tested with moisture meter, have proper moisture content.
3. Verify that nails and screws are recessed, with joints and depressions taped, finish and sealed.
4. Remove contaminants from areas to be covered.
5. Do not proceed with Work until Work of other Trades which passes through wall covering has been completed and unsatisfactory conditions have been corrected.
6. Start of Work indicates acceptance of responsibility for performance and any required remedial Work.

3.2 INSTALLATION

A. Install panels in accordance with Manufacturer's printed instructions using full sheet mastic coverage method plus nylon fasteners.

B. Make joints with 1/8-inch space for expansion and use moldings designed for each condition for the Project.

C. Bevel back edges of panels with block plane to permit proper fit into moldings.

D. Place a continuous bead of sealant in the receiver channel of all moldings immediately prior to installation of FRP panels. Place continuous bead of sealant at all edges and tool to smooth, slightly concave shape.

E. If one end of panel must be mechanically fastened, do not fasten the other end.

F. Remove plumbing escutcheons, switch plates, wall plates, and surface-mounted fixtures, and cut wall paneling evenly to fit. Replace items after completion of Work.

G. Where applicable, install paneling before installation of plumbing, casings, bases, cabinets and other items to be applied over paneling.

3.3 CLEANING

A. Remove excess adhesive and smudges with soft cloth and mineral spirits.

END OF SECTION

09 90 00
PAINTING

PART 1 GENERAL

1.01 SCOPE

A. This section includes surface preparation, painting and finishing of exposed interior and exterior items and surfaces.

B. Furnish extra materials matching products installed and equaling 2% or 5 gallons, whichever is greater, of each color and type of paint installed. Identify with appropriate labels.

1.02 WORK INCLUDED

A. Painting shall include and not be limited to emulsions, enamels, paints, varnishes and sealers.

B. It is the intent of these specifications to secure a completely finished paint job in accordance with the best usual practices.

C. All surfaces exposed in the finished work, except surfaces and areas specified not to be painted with an appropriate finish even though not specifically mentioned herein.

D. Gray prime coated material, whether baked or not is not to be construed as a finish coat.

E. The color selection shall be of unlimited paint colors for interior painted surfaces. The placement of colors shall be selected by the Architect during the submittal process.

1.03 QUALITY ASSURANCE

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:

1. The Owner will engage the services of an independent testing laboratory to sample the paint material being used. Samples of material delivered to the project will be taken, identified, sealed, and certified in the presence of the Contractor.
2. The testing laboratory will perform appropriate tests for the following characteristics as required by the Owner:
   a. Quantitative materials analysis.
   b. Abrasion Resistance.
   c. Apparent reflectivity.
   d. Flexibility.
   e. Washability.
   f. Absorption.
   g. Accelerated weathering.
   h. Dry opacity.
   I. Accelerated yellowness.
   j. Re-coating.
   k. Skinning.
   l. Re-coating.
   m. Skinning.
   n. Color retention.
   o. Alkali and mildew resistance.
   p. Adhesion.

B. If test results show material being used does not comply with specified requirements, the Contractor may be directed to stop painting, remove non-

complying paint, pay for testing, repaint surfaces coated with rejected paint, and remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are non-compatible.

C. Field quality control:
   1. Request review of first finished room, space, or item of each color scheme required by Architect for color, texture, and workmanship.
   2. Use first acceptable room, space or item as project standard for each color scheme.
   3. For spray application paint surface not smaller than 100 square feet as project standard.

1.04 SUBMITTALS

A. Submit digital copies of the manufacturer's descriptive literature, including Material Safety Data Sheets (MSDS) and color selection charts. Submittal must state volatile organic compound (VOC) emissions for each paint and coating to be used.

B. Color samples: Make samples not less than 12 inches square and prepare at the project site on hardboard. Submit in duplicate.

1.05 DELIVERY, HANDLING AND STORAGE

A. Deliver unopened sealed containers with labels legible and intact.

B. Store only acceptable project materials on project site in a suitable location. Restrict storage to paint materials and related equipment. Comply with applicable health and fire regulations.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Comply with manufacturer's recommendation as to environmental conditions under which coatings and coating system can be applied.

B. Do not apply finish in areas where dust is being generated.

C. Lighting: Provide not less than 20 foot candles illumination for all surfaces to be painted or coated.

D. Cover or otherwise protect finished work of other trades and surfaces not being painted concurrently or not to be painted.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Paint materials shall be as manufactured by Sherwin Williams or manufacturers that are equal or superior to those specified.

Dunn Edwards	Pittsburgh Paints
DeVoe and Raynolds, Co.	Dutch Boy
Benjamin Moore & Co.	Glidden Paint Co.
Cabot Stains	Sinclair Paint Co.
Olympic Stains	

B. Paint shall be well ground, shall show easy brushing properties, and shall be of such composition that it can be easily broken up with a paddle to a smooth consistency. The paint shall neither settle badly nor cake in the containers. It shall be suitable for spraying when thinned with not more than 12 percent by volume. Percentages referred to herein are by weight unless specified elsewhere.

C. Materials selected for coating systems for each type of surface shall be the product of one manufacturer.

D. Paint Color: Passive SW7064 as indicated on drawings

E. Accent Paint Color: Serious Gray SW 6256 as indicated on drawings

F. Second Accent Color: Sleepy Hollow SW 9145 as indicted on drawings

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACES

A. General:

1. Hardware, hardware accessories, plates, lighting fixtures and similar items in place prior to painting shall be removed during operations and repositioned upon completion of each space.
2. Except as otherwise specified, all surfaces to be painted shall be clean, smooth, dry and free from dust, grit and frost.
3. The moisture content of wood shall not exceed 12 percent at the time paint is applied.
4. All work shall be done in a workmanlike manner, leaving the finished surfaced free from drops, ridges, waves, laps and brush marks.
5. Paint shall be applied under dry and dust-free conditions.
6. All primer and intermediate coats of paint shall be unscarred and completely integral at the time of application of each succeeding coat
7. Sufficient time shall be allowed between coats to insure proper and thorough drying.
8. Paints shall be thoroughly stirred and kept at a uniform consistency during application and shall not be thinned in excess of the printed directions of the manufacturer. Paint containers shall not be opened until required for use.
9. Floors, roofs and other adjacent work shall be properly protected by drop cloths or other covering.

B. Metal Work: Shop-primed metal work shall be kept clean and free from corrosion following installation. Abraded surfaces shall be re-touched prior to finish painting, using the same type of paint as the priming coat.

C. Wood Work: All millwork shall be sandpapered before application of the primer sealer. All interior surfaces of doors, drawers, and interiors shall be finished.

D. Puttying: After the priming coat has been applied, nail holes, cracks, and other depressions shall be filled with putty, colored to match the finish coat, and sandpapered smooth. Putty shall be dry before subsequent painting.

E. Drywall: Shall be thoroughly dry, clean and free from grit.

3.02 PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the condition of the building in his charge.

B. He shall protect all adjacent work and materials from soiling or damage.

3.03 INSPECTION

A. Every facility shall be provided for inspection at all reasonable times.

B. Any work not conforming to these specifications shall be cleaned and repainted at the expenses of the painting contractor.

3.04 COMPLETION

A. At completion, damaged or defaced finish shall be touched up, restored in first-class condition.

B. Painted or finished surfaces damaged in fitting or erection shall be restored.

C. Touch-up shall be without perceptible difference in hue between the touch-up and the preceding coat.

D. In the event the touch-up does not match the coating in color, all surfaces in the area or room of that color shall be repainted to a uniform color.

3.05 REMOVAL

A. The Contractor shall remove all surplus materials, scaffolds, etc., from the premises and shall clean off all misplaced paint, stain, etc., to leave the premises clean.

3.06 PAINT SCHEDULE

A. This schedule is intended to cover items to be painted but does not limit the Contractor from painting all materials that normally and reasonably require paint. Where color numbers or designations are utilized on the drawings, these numbers refer to Dunn-Edwards and colors shall match Dunn-Edwards chips or designations. Prime and second coat shall be tinted to differentiate from final coat.

B. Interior Surfaces:

1. Drywall Surfaces (Dry):
   1 coat Wall prime and sealer
   2 coats Egg Shell Alkyd Enamel
2. Drywall Surfaces (Wet):
   1 coat Wall primer and sealer
   2 coats Semi-gloss Alkyd enamel
3. Metal Surfaces:
   2 coat Metal primer (unless shop coated or previously painted)
   2 coats Alkyd enamel

C. Plumbing, Heating and Electrical Items: Where exposed in finished areas, all plumbing, heating and electrical items not provided with approved factory finish shall be painted by the contractor, including all exposed piping, grills ducts, raceways, conduit, etc. Pipe insulation shall be given one coat of sizing before painting. Items shall be painted colors as selected by the Architect, and in the manner specified for painting on metal. Throats of ducts behind all grills and registers shall be painted with two coats of alkyd enamel paint to limit of vision. Paint for electrical and mechanical items shall be special heat-resistant type, as manufactured for such use.

End of Section

SECTION 12 34 16
PLASTIC FACED CASEWORK

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and services necessary for the installation of plastic faced casework, with the extent of the work as shown on the Contract Drawings. The work includes the fabrication and installation of standard plastic faced casework components of base cabinets, wall cabinets, storage cabinets, shelf units, related countertops, and other units.

B. Related work in other areas.

1. Cast-in-Place Concrete – Section 033000.
3. Plastic Laminate – Section 064116.
4. Rough Carpentry – Section 061000.
5. Solid Surface Fabrications – Section 066116.
6. Sealant and Caulking – Section 079200.
7. Gypsum Board– Section 092900.
8. Vinyl Base – Section 096513.
9. Paint – Section 099000.
10. Electrical System – Division 26.

1.02 QUALITY ASSURANCE

A. Provide plastic faced casework and countertop manufactured by the same manufacturer for single responsibility and integration with other building trades.

1.03 SUBMITTALS

A. Submit manufacturer's data and installation instructions for each type of plastic faced casework unit. Provide certification from the cabinetry manufacturer that all composite wood and agrifiber products must contain no added urea-formaldehyde resins.

B. Submit samples of casework manufacturer's standard plastic laminate colors, patterns and textures for exposed and semi-exposed materials per Section 06067.

C. Submit shop drawings for plastic faced casework and countertops showing layout, elevations, ends, cross-sections, service run spaces, and location of services. Show details and location of anchorages and fitting to floors, walls and base.

1. Include layout of units with relation to surrounding walls, doors, windows and other building components.
2. Coordinate shop drawings with other work involved.

1.04 DELIVERY, HANDLING AND STORAGE

A. Deliver plastic faced casework and countertops only after wet operations in building are complete.

B. Store completed plastic faced casework and countertops in a ventilated place, protected from the weather, with relative humidity therein of 50% or less at 70°F.

C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

1.05 JOB CONDITIONS

A. Humidity and Temperature Controls: Advise Contractor of requirements for maintaining heating, cooling and ventilation in installation areas as required to achieve the relative humidity necessary to maintain optimum moisture content.

1.06 WARRANTY

A. Provide standard five (5) year warranty for all cabinetry and related work from the date of Substantial Completion.
   1. Provide ten (10) year warranty for all drawer guides and hinges.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Provide plastic faced casework as manufactured by one of the following, or approved equal:
   1. Bob's Cabinets
   2. Shilling Cabinet Co.
   3. European Techniques.
   4. Armstrong Cabinetry.

2.02 MATERIALS

A. General:
   1. All composite wood and agrifiber products must contain no added urea-formaldehyde resins.
   2. All adhesives shall meet the requirements for Volatile Organic Compound (VOC) emission limits
   3. All wood materials shall be certified by the Forest Stewardship Council.

B. Definitions: The following definitions apply to plastic faced casework units:
   1. Exposed portions of casework include all surfaces visible when doors and drawers are closed. Bottoms of cases more than 4'-0" above floor shall be considered as exposed. Visible members in open cases or behind glass doors also shall be considered as exposed.
   2. Semi-exposed portions of casework includes those members behind doors, such as shelves, divisions, interior faces or ends, case back, drawer sides, backs and bottoms and the back face of doors. Tops of cases 6-feet 6-inches or more above floor shall be considered as exposed. All visible members in open cases or behind glass doors also shall be considered as semi-exposed portions.
   3. Concealed portions of casework include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.

C. Core Material: Minimum density 45 lb. particleboard, minimum 3/4-inch thick. Fabricate panels with plastic laminate face on both sides of balancing sheet on concealed faces.

D. Plastic Faces: All plastic laminate materials shall be by a single source manufacturer.
   1. Colors, patterns, finishes as determined by the Owner.
   2. Exposed surfaces: Per Section 064116.
   3. Semi-Exposed Surfaces: 0.020 inch thick, cabinet liner type for backs of doors and inside face of exposed ends.
   4. All other Semi-Exposed Surfaces: Low-pressure laminate, minimum 0.015-inch thick.
   5. Case Backs and Drawer Bottoms: Manufacturer's standard pre-finished tempered hardboard.
   6. Concealed Surfaces: 0.020-inch thick, liner or backer type.

E. Miscellaneous: Exposed cabinet body edges shall be covered with PVC edge banding. Door and drawer front edges shall be covered with polyethylene extruded barded T-edge. Color to be determined by the Owner.

2.03 CABINET HARDWARE

A. Hinges: Shall be five knuckle, 2-3/4-inch, overlay type, hospital tip, 0.095-inch thick

steel with either black or dull chrome finish. Hinges shall have a minimum of eight (8) edge and leaf fastenings.

B. Pulls for doors and drawers shall be round, brushed nickel finish.

C. Drawer Suspension: Shall be equipped with one pair of ball bearing nylon roller suspensions which shall be self closing from a four (4) inch extension, have a minimum load capacity of seventy-five pounds and be of zinc coated cold rolled steel.

D. Drawer Stops: All regular drawers shall be equipped with two drawer stops to the cabinet ends. The cabinet drawer stops shall be metal with attached rubber bumper and be installed to prevent the drawer face from touching the cabinet ends/edges when the drawer is in a closed position.

E. Door Catches: Shall be magnetic type with a minimum ten-pound pull, attached with screws and slotted for adjustment.

F. Shelf Supports: Shall be heavy-duty, self-locking nylon, designed for installation in pre-drilled holes in cabinet ends and vertical partitions. The shelf supports shall have two pins, .20 inches in diameter, designed to prevent the shelf support from rotating.

G. Locks (as required by the Owner): Doors and all drawers shall be five disc tumbler, cam type, keyed differently and master keyed. Each lock shall be furnished with two keys.

2.04 FABRICATION

A. Fabricate plastic faced casework to dimensions, profiles, and details shown.

B. Assemble units in the shop in as large of components as practical to minimize field cutting and jointing. All joints to be doweled and glued.

C. Cabinet Joinery: Tops and bottoms shall be jointed to cabinet ends using a minimum of eight dowels for twenty-four inch deep cabinets and a minimum of five dowels for twelve inch deep cabinets. All dowels are to be hardwood laterally fluted, with chamfered ends and a minimum diameter of eight millimeters. Internal cabinet components such as fixed horizontals, rails and verticals are to be doweled in place. Dowels are to be securely glued and cabinets clamped under pressure during assembly to assure secure joints and cabinet are square.

D. Bases: All bases and wall units shall have an integral base. Vinyl base covering will be furnished and applied by others. Plastic laminate covering shall be furnished and installed by the cabinetry manufacturer.

E. Cabinet Top and Bottom: Tops and bottoms shall be particleboard, 3/4-inch thick, laminated on the interior with low pressure laminate cabinet liner with a backer sheet of a neutral color on the unexposed surface. The interior surface of sink cabinet bottoms shall be laminated with high-pressure laminate cabinet liner. The bottom surface of all upper cabinets shall be low-pressure laminate cabinet liner. Front edges to be with PVC edging. All tops shall be solid except for sink base tops, which shall have a 1-inch x 1/8-inch angle iron front rail. All cabinets over 42 inches and up to 72 inches in height shall be supplied with a finished 3/4-inch continuous top.

F. Cabinet Ends: Unexposed cabinet ends shall be particleboard, 3/4-inch thick, laminated on the interior low-pressure laminate cabinet liner and a backer sheet of a neutral color on the exterior unexposed surface. Exposed cabinet ends shall be laminated with vertical surface low-pressure laminate on the exterior and high-pressure laminate cabinet liner, white color, on the interior. Holes shall be drilled for adjustable shelf clips 32 MM (1-1/4-inches) on center. Front edges to be banded with PVC edging. Bottom edges of wall cabinet ends to be banded with PVC edging. Ends to be bored to accept doweled top and bottom. All ends to be rabbeted to accept recessed back and to provide scribe at finished end.

G. Fixed Intermediates and Adjustable Shelves: Particleboard, 3/4-inch thick,

laminated on both sides with low-pressure laminate cabinet liner. Color shall be white on both surfaces. Front edges to be banded with PVC edging. Adjustable shelves up to 30 inches wide are 3/4-inch thick. Shelves wider than 30 inches are 1-inch thick.

H. Cabinet Back: Standard recessed cabinet back to be 1/4-inch thick pre-finished hardboard. Color to match cabinet interior. All sink cabinets to have split back, removable from inside. Exposed exteriors back on fixed or movable cabinets to be particleboard, 3/4-inch thick, laminated with high-pressure laminate on the exterior surface and white colored high-pressure laminate cabinet liner on the interior surface.

I. Cabinet Doors and Drawer Fronts: Particleboard, 3/4 inch thick, shall be laminated with vertical surface high pressure laminate on the exposed surface and white colored low pressure laminate cabinet liner on the interior surface. All corners shall be radiused and all edges edged with polyethylene extruded barbed T-edge.

J. Drawers: Sides, back and sub-front shall be particleboard, 1/2 inch thick, laminated with white colored polyester laminate. The back and sub-front are doweled and glued into the sides. Dowels shall be spaced 32MM (1-1/4 inches). Dowels are to be hardwood, laterally fluted, with chamfered ends and a minimum diameter of eight millimeters. Top edge is banded with PVC edging. Drawer bottom is white color, 1/4-inch thick, pre-finished hardboard, let into sub-front, sides and back.

2.05 COUNTERTOPS

A. Plywood, 3/4-inch thick, per Section 061000.

B. Plastic laminate per Section 064116.

C. Solid surface countertops per Section 066116.

2.06 PLASTIC LAMINATE

A. Per Section 064116.

B. Adhesives for Bonding Plastic Laminate: As required by the cabinet manufacturer and the plastic laminate manufacturer, meeting the requirements for VOC emissions.

PART 3 - EXECUTION

3.01 INSPECTION

A. The installer must examine the substrate and the conditions under which the work under this section is to be performed and notify the Contractor in writing of unsatisfactory conditions. Do not proceed with work under this section until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 PREPARATION

A. Condition plastic faced casework to average prevailing humidity conditions in installation areas prior to installing.

B. The Contractor is responsible for protecting other work previously installed or currently under construction from damage caused as a result of the installation of the plastic faced casework.

3.03 INSTALLATION

A. Install plumb, level, true and straight with no distortions. Shim as required, using concealed shims. Where plastic faced casework abuts other finished work, scribe and cut to accurate fit.

B. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.04 CLEANING AND PROTECTION

A. Repair or remove and replace defective work as directed upon completion of installation.

B. Clean plastic surfaces, repair minor damage per plastic laminate manufacturer's recommendations. Replace other damaged parts or units.

C. Advise Contractor of procedures and precautions for protection of casework and tops from damage by other trades until acceptance of the work by the Owner.

END OF SECTION

SECTION 13 07 00
BULLET RESISTANT PARTITIONS AND EQUIPMENT

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and services necessary for the installation of bullet resistant armor, glazing, and counters. Bullet resistant partitions and equipment to be installed at the counter locations at Open Office 152.

B. Related work in other areas.

1. Rough Carpentry – Section 06100.
2. Solid Surface Fabrication – Section 066116.
3. Gypsum Drywall System – Section 092900.
4. Plastic Faced Casework – Section 123416.

1.02 REFERENCES

A. ASTM A666 – Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.

B. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

C. ASTM B221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

D. ASTM C1172 – Standard Specification for Laminated Architectural Flat Glass.

E. ASTM E119 – Standard Test Method for Fire Tests of Building Construction and Materials.

F. UL 752 – Standard for Bullet Resisting Equipment.

G. NIJ Standard 0108.01 – (National Institute of Justice) Standard for Ballistic Resistant Protective Materials.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this Section will be supplied by a single manufacturer with a minimum of ten (10) years experience.

B. Installer Qualifications: All products listed in this Section are to be installed by a single installer with a minimum of five (5) years demonstrated experience installing products of the same type and scope as specified.

1.04 SUBMITTALS

A. Submit manufacturer's product data (including preparation, storage, and installation methods), cuts and anchor spacing, reinforcement and location, product specifications, shop drawings, test reports (current UL verification and UL 752 test results), and printed data in sufficient detail to indicate compliance with the Contract Documents.

B. Shop Drawings: Submit shop drawings detailing plan, section and elevation views as necessary to ensure proper field installation. Show relationships to adjoining work.

C. For each finish product specified, submit color chips representing manufacturer’s full range of available colors and patterns.

D. Provide manufacturer’s instruction for cleaning and maintenance of all bullet resistant partitions and equipment.

1.05 DESIGN PERFORMANCE

A. Through the design, manufacturing techniques and material application, the bullet resistant partitions and equipment shall meet the minimum requirements for a UL Standard 752 Level 3 protection rating.

1. Window Frames: Frames shall be constructed of extruded aluminum, 6061-T6 alloy, tempered. Frames shall have no exposed fasteners. All joints and connections shall be tight, providing hairline points and true alignment of adjacent members. Panels shall not be removable from threat side.

B. No field alterations to the construction of the assembly fabricated under the acceptable standards shall be allowed unless approved by the manufacturer and the Owner. Standard manufacturing tolerances shall be +/- 1/16".

1.06 DELIVERY, HANDLING AND STORAGE

A. Delivery and store the materials to the project with the manufacturer's UL Listed Labels intact and legible, unopened.
B. Handle the materials with care to prevent damage.
C. Store materials inside and under cover, stack flat and off floor.
D. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.07 ENVIRONMENTAL CONDITIONS

A. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations set by manufacturer. Do not install products that are under conditions outside these limits.

1.08 WARRANTY

A. At project closeout, provide to Owner an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
B. All materials shall be warranted against defects for a period of one (1) year, minimum, from the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Bullet resistant partitions and equipment shall be as manufactured by Total Security Solutions, Inc., 170 National Park Drive, Fowlerville, Michigan, 48836, (866) 930-7807, or approved equal.

2.02 MATERIALS

A. Secure Sound Bandit Barrier System: Pre-fabricated bullet resistant wall section panels with secure air passage through the window transaction point as required for voice transmission. Aluminum channel, acrylic mounting clips, acrylic buttresses and accessories for installation are included. Finish shall be clear anodized.
   1. Glazing shall be 1-1/4" LP 1250 laminated glazing, meeting or exceeding UL 752 for Level 3 ballistic integrity. All edges of acrylic shall be filed, sanded after cutting to remove rough edges, and then polished until "water clear" transparent. All through holes for fasteners shall be 3/8" in diameter and be drilled clean. Chipped edges at through-hole exit points are not acceptable. All acrylic pieces shall be supported in the proper glazing channel designed for this purpose.
   2. Deal Trays: Recessed trays are constructed on 18 gauge stainless steel in a brushed #4 finish. All joints are welded and ground smooth. Tray width is determined by the area width. Tray depth to be determined by the Owner.

3. Aluminum sections to be manufactured in accordance with ASTM B209, extruded aluminum alloy, 6063 T5, anodized, and be free of sharp edges or burrs when in place. Glazing channel is U-channel specifically designed for securing transparencies tightly in place. Angles and stops are only acceptable for top attachment. All exposed aluminum edges shall be clean cut and have no burrs. Exposed corners shall be rounded and sanded.
4. Mounting plates and or connecting clips shall be fabricated from 1/8” thick clear polycarbonate.
5. Louvers shall be constructed of 1/2" thick non-secure acrylic. The louver system height shall be determined by the Owner.

B. Bullet resistant fiberglass armor shall be as tested and approved to meet UL 752 for Level 3 rating, fabricated to fit into teller knee space areas, risers, and adjacent walls.
1. Fiberglass sheeting in counter, below solid surface countertop, shall have a painted finish at all exposed locations.
2. Fiberglass shall have all necessary cutouts provided for electrical receptacles, alarm and computer equipment.
3. Ballistic fiberglass material shall be installed by the millwork contractor within new countertops, as well as in all half wall and full wall structures adjacent to the teller counter.

C. Structural Supports (if required by the manufacturer): Install 1-1/2 inch square steel tube braces below the counter and hoods with a minimum wall thickness of 1/8 inch. Welded in place and include two vertical and horizontal members. Bolt or weld a diagonal member between the two horizontal members.

PART 3 - EXECUTION

3.01 EXAMINATION
A. Verify that the work in which the bullet resistant partitions and equipment is to be installed is free of conditions that interfere with proper operation. Do not begin installation until substrates have been properly prepared.
1. Verify that all supports have been installed as required by the Contract Documents, approved shop drawings, and the manufacturer.
B. If substrate preparation is the responsibility of another Installer, notify the Owner of unsatisfactory preparation before proceeding.

3.02 PREPARATION
A. Clean surface thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION
A. Install all bullet resistant partitions and equipment in strict compliance with the manufacturer’s instructions.
B. All wall finishes and colors shall match adjacent walls.

3.04 CLEANING AND PROTECTION
A. Verify installation is complete and complies with manufacturer’s requirements.
B. Clean products and accessories, removing excess sealant, labels, and protective covers.

C. Protect installed products until completion of the project.
D. Touch-up, repair or replace damaged products before Substantial Completion, to the approval of the Owner.

END OF SECTION

SECTION 22 05 00 – COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Related Sections include the following:

1. Division 22 Section "Identification for Plumbing Piping and Equipment" for labeling of domestic water piping and equipment.

1.2 SUMMARY

A. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Transition fittings.
3. Mechanical sleeve seals.
4. Sleeves.
5. Escutcheons.
6. Grout.
7. Equipment installation requirements common to equipment sections.
8. Painting and finishing.
9. Supports and anchorages.
10. Coordination drawings.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. PE: Polyethylene plastic.
3. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:
1. EPDM: Ethylene-propylene-diene terpolymer rubber.
2. NBR: Acrylonitrile-butadiene rubber.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.5 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for plumbing installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for plumbing items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
2. AWWA C110, rubber, flat face, 1/8 inch (3.2 mm) thick, unless otherwise indicated; and

full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

E. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

F. Solvent Cements for Joining Plastic Piping:
1. ABS Piping: ASTM D 2235.
2. CPVC Piping: ASTM F 493.
3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
4. PVC to ABS Piping Transition: ASTM D 3138.

2.4 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
1. Underground Piping NPS 1-1/2 (DN 40) and Smaller: Manufactured fitting or coupling.
2. Underground Piping NPS 2 (DN 50) and Larger: AWWA C219, metal sleeve-type coupling.
3. Aboveground Pressure Piping: Pipe fitting.

B. Plastic-to-Metal Transition Fittings: CPVC and PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.

C. Plastic-to-Metal Transition Adaptors: One-piece fitting with manufacturer's SDR 11 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.

D. Plastic-to-Metal Transition Unions: MSS SP-107, CPVC and PVC four-part union. Include brass end, solvent-cement-joint end, rubber O-ring, and union nut.

E. Flexible Transition Couplings for Underground Nonpressure Drainage Piping: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.

2.5 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig (1725-kPa) minimum working pressure at 180 deg F (82 deg C).

D. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic

washers, and steel backing washers.

1. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig (1035- or 2070-kPa) minimum working pressure where required to suit system pressures.

E. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).

F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).

2.6 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with set screws.

2.7 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.

C. One-Piece, Cast-Brass Type: With set screw.

1. Finish: Polished chrome-plated.

2.8 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.

2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS – COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Select system components with pressure rating equal to or greater than system operating pressure.

K. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:

1. New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.

b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.

c. Insulated or Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.

d. Insulated or Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece cast-brass type with polished chrome-plated finish.

e. Insulated or Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished chrome-plated finish.

f. Insulated or Bare Piping in Equipment Rooms: One-piece, cast-brass type.

L. Sleeves are not required for core-drilled holes.

M. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches (50 mm) above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.

2. Install sleeves in new walls and slabs as new walls and slabs are constructed.

3. Install sleeves that are large enough to provide 1/4-inch (6.4-mm) annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:

a. Steel Pipe Sleeves: For pipes smaller than NPS 6 (DN 150).

b. Steel Sheet Sleeves: For pipes NPS 6 (DN 150) and larger, penetrating gypsum-board partitions.

c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to

extend sleeve to 2 inches (50 mm) above finished floor level. Refer to Division 07 Section "Sheet Metal Flashing and Trim" for flashing.

1) Seal space outside of sleeve fittings with grout.

4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.

N. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Install steel pipe for sleeves smaller than 6 inches (150 mm) in diameter.

2. Install cast-iron "wall pipes" for sleeves 6 inches (150 mm) and larger in diameter.

3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

O. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

P. Verify final equipment locations for roughing-in.

Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.2 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Nonpressure Piping: Join according to ASTM D 2855.
3. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.

J. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

K. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.3 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.4 PAINTING

A. Painting of plumbing systems, equipment, and components is specified in Division 09 painting Sections.

B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.5 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 05 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.

C. Field Welding: Comply with AWS D1.1.

3.6 GROUTING

A. Mix and install grout for plumbing equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

3.7 COORDINATION DRAWINGS

A. Prepare coordination drawings in accordance with Division 01, to a scale of 1/4" = 1'-0" or larger; detailing elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the Work, including (but not necessarily limited to) the following:

1. Indicate the proposed locations of piping, ductwork, equipment, and materials. Include the following:
   - **a.** Clearances for installing and maintaining insulation.
   - **b.** Clearances for servicing and maintaining equipment, including tube removal, filter removal, and space for equipment disassembly required for periodic maintenance.
   - **c.** Equipment connections and support details.
   - **d.** Exterior wall and foundation penetrations.
   - **e.** Fire-rated wall and floor penetrations.
   - **f.** Sizes and location of required concrete pads and bases.
   - **g.** Valve stem movement.
2. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.
3. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.
4. Prepare reflected ceiling plans to coordinate and integrate installations, air outlets and inlets, light fixtures, communication systems components, sprinklers, and other ceiling-mounted items.

END OF SECTION 22 05 00

SECTION 22 05 29 – HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following hangers and supports for plumbing system piping and equipment:
  1. Steel pipe hangers and supports.
  2. Trapeze pipe hangers.
  3. Thermal-hanger shield inserts.
  4. Fastener systems.

B. Related Sections include the following:
  1. Division 05 Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.

B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Design seismic-restraint hangers and supports for piping and equipment, and obtain approval from authorities having jurisdiction.

1.5 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel." and AWS D1.4, "Structural Welding Code--Reinforcing Steel."

B. Welding: Qualify procedures and personnel according to the following:
  1. AWS D1.1, "Structural Welding Code--Steel."
  2. AWS D1.2, "Structural Welding Code--Aluminum."
  3. AWS D1.4, "Structural Welding Code--Reinforcing Steel."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 STEEL PIPE HANGERS AND SUPPORTS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

B. Manufacturers:
   1. AAA Technology & Specialties Co., Inc.
   2. Bergen-Power Pipe Supports
   3. B-Line Systems, Inc.; a division of Cooper Industries.
   4. Carpenter & Paterson, Inc.
   5. Empire Industries, Inc.
   6. ERICO/Michigan Hanger Co.
   7. Globe Pipe Hanger Products, Inc.
   8. Grinnell Corp.
   9. GS Metals Corp.
   10. National Pipe Hanger Corporation.
   11. PHD Manufacturing, Inc.
   12. PHS Industries, Inc.
   13. Piping Technology & Products, Inc.
   14. Tolco Inc.
   15. Holdrite

C. Galvanized, Metallic Coatings: Pregalvanized or hot dipped.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

2.3 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

2.4 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Manufacturers:
   a. Hilti, Inc.
   b. ITW Ramset/Red Head.
   c. Masterset Fastening Systems, Inc.
   d. MKT Fastening, LLC.
   e. Powers Fasteners.

B. Mechanical-Expansion Anchors: Insert-wedge-type zinc-coated steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
1. Manufacturers:
   a. B-Line Systems, Inc.; a division of Cooper Industries.
   b. Empire Industries, Inc.
   c. Hilti, Inc.
   d. ITW Ramset/Red Head.
   e. MKT Fastening, LLC.
   f. Powers Fasteners.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT APPLICATIONS

A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use padded hangers for piping that is subject to scratching.

F. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30 (DN 15 to DN 750).

G. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20 (DN 20 to DN 500).

H. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.

I. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.

J. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.

K. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

L. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

3.2 HANGAR AND SUPPORT INSTALLATION

A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.
3. Secure piping to trapeze hangers with upper pipe clamps.

C. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.

2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

D. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

E. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

F. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

G. Install lateral bracing with pipe hangers and supports to prevent swaying.

H. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

I. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9 (for building services piping) are not exceeded.

3.3 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches (40 mm)

3.4 PAINTING

A. Touch Up: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09 painting Sections.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 22 05 29

SECTION 22 13 16 – SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following for soil, waste, and vent piping inside the building:
1. Pipe, tube, and fittings.
2. Special pipe fittings.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. EPDM: Ethylene-propylene-diene terpolymer rubber.

C. NBR: Acrylonitrile-butadiene rubber.

D. PE: Polyethylene plastic.

E. PVC: Polyvinyl chloride plastic.

F. TPE: Thermoplastic elastomer.

1.4 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:
1. Soil, Waste, and Vent Piping: 10-foot head of water (30 kPa).

1.5 SUBMITTALS

A. Product Data: For pipe, tube, fittings, and couplings.

B. Field quality-control inspection and test reports.

1.6 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping; "NSF-drain" for plastic drain piping; "NSF-tubular" for plastic continuous waste piping; and "NSF-sewer" for plastic sewer piping.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

2.3 ABS PIPE AND FITTINGS

A. Solid-Wall ABS Pipe: ASTM D 2661, Schedule 40.

B. Cellular-Core ABS Pipe: ASTM F 628, Schedule 40.

C. ABS Socket Fittings: ASTM D 2661, made to ASTM D 3311, drain, waste, and vent patterns.

D. Solvent Cement and Adhesive Primer:
  1. Use ABS solvent cement that has a VOC content of 325 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 PVC PIPE AND FITTINGS

A. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.
  1. PVC Socket Fittings: ASTM D 2665, socket type, made to ASTM D 3311, drain, waste, and vent patterns.

B. Cellular-Core PVC Pipe: ASTM F 891, Schedule 40.
  1. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

C. Cellular-Core, Sewer and Drain Series, PVC Pipe: ASTM F 891, Series PS 100.
  1. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Series PS 100 sewer and drain pipe.

D. Solvent Cement and Adhesive Primer:
  1. Use PVC solvent cement that has a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXCAVATION

A. Refer to Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. Flanges and unions may be used on aboveground pressure piping, unless otherwise indicated.

B. Aboveground in wall/floor, soil, waste, & vent piping NPS 4 (DN 100) and smaller shall be the following:
1. Cellular-core ABS pipe, ABS socket fittings, and solvent-cemented joints.
2. Cellular-core PVC pipe, PVC socket fittings, and solvent-cemented joints.
3. Cellular-core, Sewer and Drain Series, PVC pipe; PVC socket fittings; and solvent-cemented joints.
4. Dissimilar Pipe-Material Couplings: Flexible, nonpressure pipe couplings for joining dissimilar pipe materials with small difference in OD.

C. Underground, soil, waste, and vent piping NPS 4 (DN 100) and smaller shall be the following:
1. Cellular-core ABS pipe, ABS socket fittings, and solvent-cemented joints.
2. Cellular-core PVC pipe, PVC socket fittings, and solvent-cemented joints.
3. Cellular-core, Sewer and Drain Series, PVC pipe; PVC socket fittings; and solvent-cemented joints.
4. Dissimilar Pipe-Material Couplings: Flexible, nonpressure pipe couplings for joining dissimilar pipe materials with small difference in OD.

D. HVAC Condensate Drain Piping Above Grade: Use the following:
1. 1/2 to 4 Inches: Hard copper tube, Type M; wrought-copper or cast-copper-alloy DWV fittings, solder joints with alloy Sn95 solder.

3.3 PIPING INSTALLATION

A. Basic piping installation requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.

C. Install cleanout fitting with closure plug inside the building in sanitary force-main piping.

D. Install wall-penetration fitting at each service pipe penetration through foundation wall. Make installation watertight.

E. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

F. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.

Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

G. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:
1. Building Sanitary Drain: 1/4 inch per foot (2 percent) for piping 2 inches and smaller; 1/8 inch per foot (1 percent) for piping 3 inches and larger.
2. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

H. Install engineered soil and waste drainage and vent piping systems as follows:
1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
2. Sovent Drainage System: Comply with ASSE 1043 and sovent fitting manufacturer's written installation instructions.
3. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.

I. Install ABS soil and waste drainage and vent piping according to ASTM D 2661.

J. Install PVC soil and waste drainage and vent piping according to ASTM D 2665.

K. Install underground ABS and PVC soil and waste drainage piping according to ASTM D 2321.

L. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

3.4 JOINT CONSTRUCTION

A. Basic piping joint construction requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

C. PVC Nonpressure Piping Joints: Join piping according to ASTM D 2665.

3.5 HANGAR AND SUPPORT INSTALLATION

A. Pipe hangers and supports are specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment." Install the following:
1. Vertical Piping: MSS Type 8 or Type 42, clamps.
2. Install individual, straight, horizontal piping runs according to the following:
   a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
3. Base of Vertical Piping: MSS Type 52, spring hangers.

B. Install supports according to Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced 1 size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.

E. Install supports for vertical ABS soil piping every 15 feet (4.5 m).

F. Install hangers for ABS and PVC piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
2. NPS 3 (DN 80): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
3. NPS 4 and 5 (DN 100 and 125): 48 inches (1200 mm) with 5/8-inch (16-mm) rod.
4. NPS 6 (DN 150): 48 inches (1200 mm) with 3/4-inch (19-mm) rod.
5. NPS 8 to NPS 12 (DN 200 to DN 300): 48 inches (1200 mm) with 7/8-inch (22-mm) rod.

G. Install supports for vertical ABS and PVC piping every 48 inches (1200 mm).

H. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:
1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.

3.7 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent

piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.

3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping, except outside leaders, on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water (30 kPa). From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg (250 Pa). Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.8 CLEANING

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

END OF SECTION 22 13 16

SECTION 22 13 16.1 – PICOTE BRUSH COATING SYSTEM

PART 1 - GENERAL

A. This Section includes the minimum requirements for the rehabilitation of sanitary and storm sewer pipelines by the installation of PICOTE Brush Coating System as manufactured by Picote Solutions Inc. It is applicable to all non-potable and wastewater applications for pipe diameters between DN50mm (2”) and DN300mm (12”) diameter for clay, concrete, and cast iron pipes and DN32mm (1-1/4”) and DN300mm (12”) for copper, steel, and PVC pipes.

B. The rehabilitation of pipelines shall be done by the installation of a brushed epoxy resin coating which, when cured, shall be continuous and throughout the entire length of the original pipe. The epoxy resin coating shall extend the full length of the original pipe and provide a jointless and water-tight new pipe interior. The Contractor is responsible for proper, accurate and complete installation of the epoxy resin coating using the PICOTE Brush Coating System, meeting the Owners requirements.

C. Neither the PICOTE product, system, nor its installation, shall cause adverse effects to any of the Owner’s processes or facilities. The installation pressure for the product shall not damage the system in any way, and the use of the product shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant. The Contractor shall notify the Owner and identify any by-products produced as a result of the installation operations, test and monitor the levels, and comply with any and all local waste discharge requirements. The Contractor shall cleanup, restore existing surface conditions and structures, and repair any of the PICOTE system determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses and property owners or tenants and to provide an environmentally safe restored jobsite.

D. The prices submitted by the Contractor, shall include all costs of permits, labor, equipment and materials for the various bid items necessary for furnishing and installing, complete in place, PICOTE epoxy resin coating in accordance with these specifications. All items of work not specifically mentioned herein which are required, by the Contractor, to make the product perform as intended and deliver the final product as specified herein shall be included in the respective lump sum and unit prices bid.

1.1 DESCRIPTION OF WORK AND PRODUCT DELIVERY

A. This Section covers all work necessary to furnish and install the PICOTE system. The Contractor shall provide all materials, labor, equipment, and services necessary for traffic control (if required), bypass pumping and/or diversion of flows, cleaning, measurement and television inspection of sewers to be rehabilitated, epoxy resin installation, reconnection of service connections, all quality controls, provide samples for performance of required material tests, final television inspection, testing of the rehabilitated pipe system, warranty work and other work, all as specified herein.

B. The system comprises of a two part 100% solids epoxy resin (Dual Coat 1000e) that is applied to the inside wall of deteriorated pipes. The resin is transported into the pipe using the PICOTE range of coating pumps and then applied to the pipe wall by the PICOTE Miller which power the PICOTE brushes. The two part resin is supplied in cartridges to the correct component mix ratio.

Wall thickness up to 7mm (9/32”) can be achieved by multiple passes of the system.

C. The epoxy resin coating shall be continuous and jointless from manhole to manhole or access point to access point and shall be free of all defects that will affect the long-term life and operation of the pipe.

D. The epoxy resin coating shall not leak at the manholes or through the wall of the installed pipe.

E. All existing and confirmed active service connections and any other service laterals to be reinstated, as directed by the Owner, shall be re-opened robotically to their original shape and to 90% - 95% of their original area. All over-cut or under-cut service connections shall be properly repaired to meet the requirements of these specifications.

F. All materials furnished, as part of this contract shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirement of this contract.

G. Testing and warranty inspections shall be executed by the Owner. Any defects found shall be repaired or replaced by the Contractor.

H. The Contractor shall furnish, from the project installation, all samples, marked with chain of custody information such as project name, section, date, diameter and thickness, etc., for product testing at the request of the Owner. The Owner shall take possession of the samples for testing and shall maintain the chain of custody, deliver the samples to an approved laboratory and pay for all material and product testing performed under this contract.

1.2 REFERENCES

A. ASTM D790-15e2, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

B. BS EN ISO 11296-4-2018, Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks – Part 4: Lining with cured-in-place pipes.

C. ASTM D648 – 18, Standard Test Method For Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.

D. WIS 4-35-01 Issue 2, Specification for thermoplastics structured wall pipe – supplementary test requirements, October 2008, Appendix B.

E. EN 295-3:2012, Vitrified clay pipe systems for drains and sewers. Test methods.

F. WRc Sewerage Rehabilitation Manual.

G. Picote installation documentation

1.3 PERFORMANCE WORK STATEMENT SUBMITTAL

A. The Contractor shall submit, to the Owner, a Performance Work Statement (PWS) which clearly defines the PICOTE product delivery in conformance with the requirements of these contract documents. Unless otherwise directed by the Owner, the PWS shall, at a minimum, contain the

following:

1. Clearly indicate that the epoxy resin coating will conform to the project requirements as outlined in the Description of Work and as delineated in these specifications.

2. A detailed product installation plan describing all preparation work, cleaning operations, pre-CCTV inspections, bypass pumping, traffic control, installation procedure, method of curing, service reconnection, quality control, testing to be performed, final CCTV inspection, warrantees furnished and all else necessary and appropriate for a complete epoxy resin coating installation. A detailed installation schedule shall be prepared, submitted and conform to the requirements of this contract.

3. Contractor's description of the proposed PICOTE technology, including a detailed plan for identifying all active service connections maintaining service, during mainline epoxy resin coating installation, to each home connected to the section of pipe being rehabilitated, including temporary service for commercial, industrial and apartment complexes, if required by the contract.

4. A description of the PICOTE materials to be furnished for the project. Materials shall be fully detailed in the submittals and conform to these specifications and/or shall conform to the pre-approved product submission.

B. Proposed manufacturers technology data shall be submitted for all PICOTE products and all associated technologies to be furnished.

C. Submittals shall include information on epoxy resin coating intended for installation and all tools and equipment required for a complete installation. The PWS shall identify which tools and equipment will be redundant on the job site in the event of equipment breakdown. All equipment to be furnished for the project, including proposed back-up equipment, shall be clearly described. The Contractor shall outline the mitigation procedure to be implemented in the event of key equipment failure during the installation process.

D. A detailed description of the Contractor's proposed procedures for removal of any existing blockages in the pipeline that may be encountered during the cleaning process.

E. An odor control plan shall be submitted, by the Contractor, that will ensure that project specific odors will be minimized at the project site and surrounding area.

F. Compensation for all work required for the submittal of the PWS shall be included in the various pipelining items contained in the Proposal.

1.4 PRODUCT SUBMITTALS

A. Raw Resin Data - including the manufacturer and description of product components as well as mechanical properties, corrosion data and creep data.

B. Manufacturers' shipping, storage and handling recommendations for all components of the PICOTE system.

C. Safety Data Sheets (SDS) for all materials to be furnished for the project.

D. Compensation for all work required for the submittal of product data shall be included in the Lump Sum price contained in the Proposal for Mobilization.

1.5 SAFETY

A. The Contractor shall conform to all work safety requirements of pertinent regulatory agencies and shall secure the site for the working conditions in compliance with the same. The Contractor shall erect signs and other devices as are necessary for the safety of the work site.

B. The Contractor shall perform all of the Work in accordance with applicable OSHA standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for pipe renewal.

C. The Contractor shall submit a proposed Safety Plan to the Owner prior to beginning any work, identifying all competent persons. The plan shall include a description of a daily safety program for the job site and all emergency procedures to be implemented in the event of a safety incident. All work shall be conducted in accordance with the Contractor's submitted Safety Plan.

D. Compensation for work required for the submittal of the Safety Plan shall be included in the various pipelining items contained in the Proposal.

1.6 QUALITY-CONTROL PLAN (QPC)

A. A detailed quality control plan (QCP) that fully represents and conforms to the requirements of these specifications shall be submitted to the Owner. At a minimum the QCP shall include the following:

1. A detailed discussion of the proposed quality controls to be performed by the Contractor.

2. Defined responsibilities, of the Contractor's personnel, for assuring that all quality requirements for this contract are met. These shall be assigned by the Contractor to specific personnel.

3. Proposed procedures for quality control, product sampling and testing shall be defined and submitted as part of the plan.

4. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form.

5. Scheduled performance and product test result reviews between the Contractor and the Owner at a regularly scheduled job meeting.

6. Inspection forms and guidelines for quality control inspections shall be prepared in accordance with the standards specified in this contract and submitted with the QCP.

1.7 EPOXY RESIN COATING REPAIR/REPLACEMENT

A. Occasionally installations will result in the need to repair or replace a defective epoxy resin coating. The Contractor shall outline specific repair procedures for potential defects that may

occur in the coating. Repair procedures shall be as recommended by PICOTE and shall be submitted as part of the PWS.

B. Defects in the epoxy resin coating that will not affect the operation and long-term life of the product shall be identified and defined.

C. Repairable defects that may occur in the epoxy resin coating shall be specifically defined by the Contractor based on manufacturer's recommendations, including a detailed step-by-step repair procedure, resulting in a finished product meeting the requirements of these contract specifications.

1.8 AS-BUILT DRAWINGS/RECORDS

A. As-Built drawings/records, pre & post inspection videotapes, CDs or other electronic media shall be submitted to the Owner, by the Contractor, within 2 weeks of final acceptance of said work or as specified by the Owner. As-Built drawings/records will include the identification of the work completed by the Contractor and shall be prepared on one set of Contract Drawings/Records provided to the Contractor at the onset of the project.

B. As-Built drawings/records shall be kept on the project site at all times, shall include all necessary information as outlined in the PWS or as agreed to by the Owner and the Contractor at the start of the Contract, shall be updated as the work is being completed and shall be clearly legible.

C. Compensation for all work required for the submittal and approval of As-Built drawings/records shall be included in the various pipelining items contained in the Proposal.

1.9 WARRANTY

A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The Contractor shall warrant the epoxy resin coating material and installation for a period of one (1) year. During the Contractor warranty period, any defect which may materially affect the integrity, strength, function and/or operation of the pipe, shall be repaired at the Contractor's expense in accordance with procedures included in Section 1.7 Epoxy Resin Coating Repair/Replacement and as recommended by the manufacturer.

B. On any work completed by the Contractor that is defective and/or has been repaired, the Contractor shall warrant this work for (1) year in addition to the warrantee required by the contract.

C. After a pipe section has been rehabilitated and for a period of time up to one (1) year following completion of the project, the Owner may inspect all or portions of the rehabilitated system. The specific locations will be selected at random by the Owner's inspector and should include all sizes of epoxy resin coating from this project. If it is found that any of the epoxy resin coating has developed abnormalities since the time of "Post Construction Television Inspection," the abnormalities shall be repaired and/or replaced as defined in Section 1.7 Epoxy Resin Coating Repair/Replacement and as recommended by the manufacturer. If, after inspection of a portion of the rehabilitated system under the contract, problems are found, the Owner may televise all the epoxy resin coating installed on the contract. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with Section 1.7 Epoxy Resin Coating

Repair/Replacement and per the original specifications, all at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The PICOTE System must meet the chemical resistance requirements of these contract documents.

B. All materials shipped to the project site shall be accompanied by test reports certifying that the material conforms to the appropriate ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of PICOTE to avoid damage. Damage includes, but is not limited to, gouging, abrasion, flattening, cutting, puncturing or ultra-violet(UV) degradation. On site storage locations shall be approved by the Owner. All damaged materials shall be promptly removed from the project site at the Contractor's expense and disposed of in accordance with all current applicable agency regulations.

2.2 TYPE TESTING

A. The PICOTE system shall comply with the following test requirements:

1. Appearance: The internal surface of the coating shall be smooth, clean, and free from scoring, cavities, and other surface defects that would prevent the PICOTE system from meeting the general fitness for purpose requirement.
2. Mechanical Characteristics Testing: The mechanical testing requirements are listed below.

Characteristic	Standard Test method	Declared value
Short-term flexural modulus	ASTM D790[(1)]	2800 MPa (406 ksi)
Long-term flexural modulus	BS EN ISO 11296-4[(2)] Annex C	Due March 2020
Temperature of deflection under load	ASTM D648[(3)] Method B	44°C (111°F)

3. Reistance to high pressure water jetting: When tested in accordance with the test method and requirements of WIS 4-35-01(4) Issue 2, October 2008, Appendix B, the PICOTE system shall resist a jetting pressure of 180 bar (2610 psi)
4. Resistance to Abrasion: When tested in accordance with EN 295-3(5) section 15, the PICOTE system shall have a maximum depth of abrasion of 0.5mm (0.02").

PART 3 - INSTALLATION

3.1 CONSTRUCTION REQUIREMENTS

A. The Contractor shall create and utilize equipment pits at the locations indicated on the Plumbing Plans as entry points for the epoxy resin coating process. Mop sinks may also be used as entry points to the sewer system where needed.

B. Cleaning of Pipelines – Before ordering materials for the project, the Contractor shall remove all internal debris from the pipeline that will interfere with the installation, as required in these specifications, and accurately measure and document the diameter and length of the existing pipeline to be rehabilitated. Solid debris and deposits shall be removed from the system and disposed of properly by the Contractor. Moving material from manhole section to manhole section shall not be allowed. As applicable, the Contractor shall either plug or install a flow bypass pumping system to properly clean the pipelines. Precaution shall be taken by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe. The repair of any damage, caused by the cleaning equipment, shall be the responsibility of the Contractor. The Owner will designate a site for the disposal of all debris removed from the Owner's sewer system as a direct result of the cleaning operation. Unless otherwise specified by the Owner, the Contractor shall dispose of all debris at no charge. Should any dumping fees apply, the Contractor shall be compensated at the respective unit price bid in the Proposal for cleaning.

C. Bypassing Existing Flows - The Contractor shall provide for the flow of existing mainline and service connection effluent, if applicable, around the section or sections of pipe designated for epoxy resin coating. With most small diameter pipelines, particularly on terminal sewers, plugging will be adequate but must be monitored on a regular basis to prevent backup of sewage into adjacent areas. Installation of the epoxy resin coating shall not begin until the Contractor has installed the required plugs.

D. Contractor shall perform post-cleaning video inspections of the pipelines. Only PACP certified personnel trained in locating defects, obstacles and service connections by closed circuit television shall perform the inspection. The Contractor shall provide the Owner a copy of the pre-cleaning and post-cleaning video and suitable log, and/or in digital format, for review prior to installation of the epoxy resin coating and for later reference by the Owner.

E. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions that will interfere with the installation and long-term performance of the epoxy resin coating. If pre-installation inspection reveals an obstruction, misalignment, broken or collapsed section or sag that was not identified as part of the original scope of work and will prohibit proper installation of the epoxy resin coating, the Contractor may be directed by the Owner to correct the problem(s) prior to installation by utilizing open cut repair methods. The Contractor shall be compensated for this work under a contingency pay item designated for open cut point repairs. Removal of any previously unknown obstructions shall be considered as a changed condition. The cost of removal of obstructions that appeared on pre-bid video documentation and made available to the Contractor, prior to the bid opening, shall be compensated for on a unit price basis in accordance with the contract documents.

F. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing the epoxy resin coating. If required in the contract documents, each connection will be dye tested to determine whether or not the connection is live or abandoned. Other approved methods to confirm live connections are acceptable. The cost for dye testing of existing service connections shall be compensated at the unit price bid in the Proposal for Dye Testing of Existing Service Connections. In the event the status of a service connection cannot be

adequately defined, the Owner will make the final decision, prior to installation of the epoxy resin coating, as to the status. Typically, only service connections deemed “active” shall be reopened by the Contractor.

G. The Contractor shall be allowed use water from an owner-approved fire hydrant in the project vicinity. Use of an approved double check backflow assembly shall be required. Contractor shall provide his own approved assembly. Contractor shall pay current market price for all water usage.

3.2 INSTALLATION OF EPOXY RESIN COATING

A. The epoxy resin coating shall be brushed in the host pipe per the manufacturer’s specifications as described and submitted in the PWS.

B. The minimum number of coats shall be per PICOTE recommendations, as shown below:

Pipe diameter	Number of Coats (Corrosion Resistance)	Number of Coats (Semi Structural)
DN32 (1¼”)	2	2
DN40 (1½”)	2	2
DN50 (2”)	2	2
DN70 (3”)	2	2
DN100 (4”)	2	3 to 4
DN150 (6”)	2 to 3	4 to 5

C. Subsequent coats of resin shall be applied in contrasting colored layers to provide a visual indication for the coverage of each coat.

D. If the previous coat sits for longer than 12 hours before being coated again, the pipe will need to be abraided.

E. Coated pipes may be returned to service after 4 hours for light use and water contact, and after 24 hours for pressure testing and completely cured.

3.3 FINISH

A. The installed epoxy resin coating shall be continuous over the entire length of a sewer line section and be free from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. The epoxy resin coating shall be impervious and free of any leakage.

B. If any of the service connections leak water between the host pipe and the epoxy resin coating, the connection mainline interface shall be sealed, if required by these specifications, to provide a leak tight connection.

C. If the epoxy resin coating leaks, it shall be repaired as recommended by the PICOTE system.

3.4 MANHOLE CONNECTIONS AND RECONNECTIONS OF EXISTING SERVICES

A. A seal, consisting of a resin mixture or hydrophilic seal compatible with the installed epoxy resin coating, shall be applied at manhole/wall interface, if specified, in accordance with the PICOTE System manufacturer's recommendations.

B. Existing services shall be internally or externally reconnected unless indicated otherwise in the contract documents

C. Reconnections of existing services shall be made after the epoxy resin coating has been installed and fully cured. It is the Contractor's responsibility to make sure that all active service connections are reconnected. If verification of active service connections requires techniques beyond standard mainline CCTV then a separate bid item shall be included.

3.5 FINAL ACCEPTANCE

A. Repairs to the epoxy resin coating, as applicable, shall be completed before final acceptance, meeting the requirements of these specifications and documented in written form.

B. The Contractor shall perform a detailed closed-circuit television inspection in the presence of the Owner after installation of the epoxy resin coating and reconnection of the side sewers. Conventional pan and tilt TV camera or sidewall scanning technology, as approved by Owner, shall be used. The finished epoxy resin coating shall be continuous over the entire length of the installation and shall be free of significant visual defects, damage, lifts, holes, leaks and other defects that are not a reflection of the existing pipe condition. Unedited digital documentation of the inspection shall be provided to the Owner within ten (10) working days of the epoxy resin coating installation. The data shall note the inspection date, location of all reconnected side sewers, debris, as well as any defects in the epoxy resin coating, including, but not limited to, gouges, cracks, bumps, or bulges. If post installation inspection documentation is not submitted within ten (10) working days of the epoxy resin coating installation, the Owner may at its discretion suspend any further installation of epoxy resin coating until the post-installation documentation is submitted. As a result of this suspension, no additional working days will be added to the contract, nor will any adjustment be made for increase in cost. Immediately prior to conducting the closed-circuit television inspection, the Contractor shall thoroughly clean the newly installed epoxy resin coating removing all debris and build-up that may have accumulated at no additional cost to the Owner.

C. If required by the Owner in the specifications, and if the pipe diameter is less than or equal to 36", the epoxy resin coating shall be tested for leakage using the water exfiltration test (ASTM F1216 8.2) or a low pressure air test (refer to Appendix A). Testing is limited to pipe lengths with no reinstated service laterals and could delay service lateral reinstatement. Water exfiltration or air testing is not recommended in pipe diameters exceeding 36" diameter. In these cases, a visual inspection for leakage shall be performed, if specified.

Any unacceptable leakage through the epoxy resin coating should be repaired as required in the specifications or agreed to by the owner.

Not all epoxy resin coated line segments can be air tested because of end configurations in the

manhole. It is recommended that only a set percentage of the line segments in any one project be tested in lieu of testing each line segment.

Low pressure air testing can be a dangerous operation. It is imperative that all safety protocols for plug operation & maintenance and air testing be followed, including proper blocking/bracing of plugs during the air test and limiting air tests to a maximum diameter of 36 inches.

D. Bypass pumping or plugging from the upstream manhole shall be utilized to minimize sewage from entering the line during the inspection. In the case of bellies in the line, the pipe shall be cleared of any standing water to provide continuous visibility during the inspection.

3.6 TYPICAL BID ITEMS

A. Mobilization – Lump Sum - Includes all PWS information, submittals, safety plan, as-builtdrawings, testing samples, mobilization/demobilization of labor, equipment and materials to the project site. Generally limited to 5% of the total amount bid for the project.

B. Pre-Installation CCTV Inspection – Per linear foot - Includes pre-cleaning and post cleaning CCTV for Owner review. Does not include CCTV inspection just prior to epoxy resin coating installation. All inspections will be performed by PACP trained and certified personnel.

C. Dye Testing of Service Connections – Per each - Includes dye testing and documentation of existing service connection on each pipe length to be lined.

D. Point Repairs – Per each or by Lump Sum Contingency - Includes excavation and restoration of a section or sections of pipe that are beyond rehabilitation using epoxy resin coating. Note: Point repair items shall be categorized by pipe size, a minimum length of excavation and depth category of excavation to be paid for in the Proposal. If point repairs are not identified in the contract documents, payment shall be on a contingency basis.

E. Standard Pipe cleaning – Per linear foot for each pipe size category – including all labor, equipment, materials and cost of material disposal.

F. Heavy Pipe Cleaning – Per linear foot for each pipe category – including all labor, equipment, materials and cost of material disposal.

G. Epoxy Resin Coating Installation – Per linear foot for each pipe size category - Includes all labor, equipment and materials required for the complete installation of a epoxy resin coating.

H. Traffic Control – Lump Sum – Includes all labor, equipment and materials required to implement a traffic control plan for the entire project and shall include all costs associated with sub-contracted traffic control specialists.

I. Service Reconnections – Per each – Includes reconnecting existing live sewer service connections to the installed epoxy resin coating. Owner shall review and verify those connections that are not live and will be left unopened.

J. Post Construction CCTV Inspection - Per linear foot - Includes post lining CCTV for submission to the Owner. All inspections will be performed by PACP trained and certified personnel.

K. Reserve for Testing – Lump Sum Reserve – For Owners use to include testing required as directed by the Owner, under this contract, by an independent laboratory. (The amount will be set by the Owner in the Bid Proposal)

END OF SECTION 22 13 16.1

SECTION 22 13 19 – SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following sanitary drainage piping specialties:
1. Cleanouts.
2. Floor drains.
3. Floor sinks
4. Miscellaneous sanitary drainage piping specialties.
5. Flashing materials.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. HDPE: High-density polyethylene plastic.

C. PE: Polyethylene plastic.

D. PP: Polypropylene plastic.

E. PVC: Polyvinyl chloride plastic.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories for the following:
1. Cleanouts.
2. Floor drains.
3. Floor sinks.
4. Air-admittance valves.
5. Miscellaneous sanitary drainage piping specialties.

1.5 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary

piping specialty components.

1.6 COORDINATION

A. Coordinate size and location of roof penetrations prior to installation.

PART 2 - PRODUCTS

2.1 CLEANOUTS

A. Available Manufacturers:
- **1.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - **a.** Josam Company; Josam Div.
  - **b.** MIFAB, Inc.
  - **c.** Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
  - **d.** Tyler Pipe; Wade Div.
  - **e.** Watts Drainage Products Inc.
  - **f.** Zurn Plumbing Products Group; Specification Drainage Operation.
  - **g.** Josam Company; Blucher-Josam Div.

B. Floor Cleanouts FCO.
- **1.** Standard: ASME A112.36.2M cleanout.
- **2.** Size: Same as connected branch.
- **3.** Closure: Brass plug with straight threads and gasket.
- **4.** Adjustable Housing Material: Cast iron.
- **5.** Frame and Cover Material and Finish: Carpeted Floors: Provide carpet flange. Uncarpeted Floors; Provide polished bronze top.
- **6.** Frame and Cover Shape: Round.
- **7.** Top Loading Classification: Medium duty.

C. Wall Cleanouts WCO:
- **1.** Standard: ASME A112.36.2M. Include wall access.
- **2.** Size: Same as connected drainage piping.
- **3.** Body: as required to match connected piping.
- **4.** Closure: Brass plug.
- **5.** Wall Access: Round, flat, chrome-plated cover plate with screw.

D. 2-Way Grade Cleanout 2WGCO.
- **1.** Standard: ASME A112.36.2M cleanout.
- **2.** Size: Same as connected branch.
- **3.** Closure: Brass plug with straight threads and gasket or Brass plug with tapered threads.
- **4.** Adjustable Housing Material: Cast iron
- **5.** Frame and Cover Material and Finish: Nickel brass
- **6.** Frame and Cover Shape: Round.
- **7.** Top Loading Classification: Heavy Duty.

E. Grade Cleanout GCO:
- **1.** Standard: ASME A112.36.2M cleanout.

2. Size: Same as connected branch.
3. Closure: Brass plug with straight threads and gasket or Brass plug with tapered threads.
4. Adjustable Housing Material: Cast iron
5. Frame and Cover Material and Finish: Nickel bronze top.
6. Frame and Cover Shape: Round
7. Top Loading Classification: Heavy Duty.

2.2 FLOOR DRAINS AND FLOOR SINKS

A. Available Manufacturers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Josam Company; Josam Div.
   b. MIFAB, Inc.
   c. Prier Products, Inc.
   d. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   e. Tyler Pipe; Wade Div.
   f. Watts Drainage Products Inc.
   g. Zurn Plumbing Products Group; Specification Drainage Operation.

B. Floor Drains Type FD:
1. Standard: ASME A112.6.3
2. Pattern Floor drain.
3. Body Material Cast Iron.
4. Seepage Flange: Required.
5. Anchor Flange: Required.
6. Clamping Device: Required.
7. Outlet: Bottom.
8. Top or Strainer Material: Nickel bronze.
9. Top of Body and Strainer Finish: Nickel bronze.
10. Top Shape: Round.
11. Dimensions of Top or Strainer: 6-inch.
12. Top Loading Classification: Medium duty.
13. Trap Material: Cast iron.
14. Trap Pattern: Standard P-trap.

C. Floor Sink Type: FS with open top:
1. Standard: ASME A112.6.3.
2. Body Material: Cast Iron.
3. Seepage Flange: Not required.
4. Anchor Flange: Required.
5. Clamping Device: Required.
6. Outlet: Bottom.
7. Sediment Bucket: Not required.
8. Top or Strainer Material: No Grate with aluminum strainer.
9. Top of Body and Strainer Finish: Aluminum strainer
10. Top Shape: Square.
11. Dimensions of Top or Strainer: 12x12.
12. Top Loading Classification: Medium duty.
13. Trap Material: Cast iron.

14. Trap Pattern: Standard P-trap.

D. Floor Sink Type: FS-1 with open top:
1. Standard: ASME A112.6.3.
2. Body Material: Cast Iron
3. Seepage Flange: Not required.
4. Anchor Flange: Required.
5. Outlet: Bottom.
6. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.
7. Sediment Bucket: **Aluminum, with stainless mesh liner having min. 331 holes per square inch**
8. Top Shape: Square.
9. Dimensions of Top: 10x10
10. Trap Material: Cast iron.
11. Trap Pattern: Standard P-trap.

2.3 ROOF FLASHING ASSEMBLIES

A. Description: Manufactured assembly made of 4.0-lb/sq. ft. (20-kg/sq. m), 0.0625-inch- (1.6-mm-thick, lead flashing collar and skirt extending at least 6 inches from pipe, with galvanized-steel boot reinforcement and counterflashing fitting.

2.4 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

2.5 TRAP-SEAL – INLINE

A. Inline floor drain trap seal silicon rubber sealing flapper. Tested and certified to the ASSE 1072 Standard and listed with IAPMO and I.C.C. Specify connection size (2”, 3”, 3 1/2” or 4”)
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. MIFAB, Inc.
b. Rectorseal Sure Seal

B. Air-Gap Fittings:
1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
2. Body: Bronze or cast iron.
3. Inlet: Opening in top of body.
4. Outlet: Larger than inlet.
5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to Division 22 Section "Common Work Results for Plumbing" for piping joining materials, joint construction, and basic installation requirements.

B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
1. Size same as drainage piping up to NPS 4 (DN 100). Use NPS 4 (DN 100) for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 135 degrees.
3. Locate at minimum intervals of 50 feet (15 m) for piping NPS 4 (DN 100) and smaller and 100 feet (30 m) for larger piping.
4. Locate at base of each vertical soil and waste stack.

C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

D. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
1. Position floor drains for easy access and maintenance.
2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
   a. Radius, 30 Inches (750 mm) or Less: Equivalent to 1 percent slope, but not less than 1/4-inch (6.35-mm) total depression.
   b. Radius, 30 to 60 Inches (750 to 1500 mm): Equivalent to 1 percent slope.
   c. Radius, 60 Inches (1500 mm) or Larger: Equivalent to 1 percent slope, but not greater than 1-inch (25-mm) total depression.
3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

E. Assemble plastic channel drainage system components according to manufacturer's written instructions. Install on support devices so that top will be flush with adjacent surface.

F. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.

G. Install flashing fittings on sanitary stack vents and vent stacks that extend through roof.

H. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

I. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.

J. Install wood-blocking reinforcement for wall-mounting-type specialties.

K. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

L. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe

fittings.

3.2 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Grease Interceptors: Connect inlet and outlet to unit, and connect flow-control fitting and vent to unit inlet piping.

3.3 FLASHING INSTALLATION

A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:
1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft. (30-kg/sq. m), 0.0938-inch (2.4-mm) thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft. (20-kg/sq. m), 0.0625-inch (1.6-mm) thickness or thinner.

B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches (250 mm), and skirt or flange extending at least 8 inches (200 mm) around pipe.
2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches (200 mm) around sleeve.
3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches (200 mm) around specialty.

C. Set flashing on floors and roofs in solid coating of bituminous cement.

D. Secure flashing into sleeve and specialty clamping ring or device.

E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Division 07 Section "Sheet Metal Flashing and Trim."

F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

G. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:
1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and

equipment.

3.5 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 22 13 19

SECTION 22 40 00 – PLUMBING FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes plumbing fixtures and trim, fittings, and accessories, appliances, appurtenances, equipment, and supports associated with plumbing fixtures.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.

C. Cast Polymer: Cast-filled-polymer-plastic material. This material includes cultured-marble and solid-surface materials.

D. Cultured Marble: Cast-filled-polymer-plastic material with surface coating.

E. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Fittings specified in this Section include supplies and stops, faucets and spouts, shower heads and tub spouts, drains and tailpieces, and traps and waste pipes. Piping and general-duty valves are included where indicated.

F. FRP: Fiberglass-reinforced plastic.

G. PMMA: Polymethyl methacrylate (acrylic) plastic.

H. PVC: Polyvinyl chloride plastic.

I. Solid Surface: Nonporous, homogeneous, cast-polymer-plastic material with heat-, impact-, scratch-, and stain-resistance qualities.

1.4 SUBMITTALS

A. Product Data: For each type of plumbing fixture indicated. Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports. Indicate materials and finishes, dimensions, construction details, and flow-control rates.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Operation and Maintenance Data: For plumbing fixtures to include in emergency, operation, and

maintenance manuals.

D. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
  1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for plumbing fixtures for people with disabilities.

D. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.

E. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.

F. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.

1.6 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. Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
  2. Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.
  3. Flushometer Valve, Repair Kits: Equal to 10 percent of amount of each type installed.
  4. Toilet Seats: Equal to 5 percent of amount of each type installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products in each category, by one of the following listed for that category:
  1. Water Closets 1.28 gpf:
    a. American Standard, Inc.
    b. Kohler Co.
    c. Sloan
  2. Urinals: High Efficient .125 GPF
    a. American Standard, Inc.

b. Kohler Co.
c. Sloan

3. Lavatories:
a. American Standard, Inc.
b. Kohler Co.
c. Sloan

4. Sinks:
a. Elkay Manufacturing Co.
b. Just Manufacturing Co.
c. Kohler Co.

5. Mop Sinks:
a. Aqua Glass Corp.
b. Fiat Products.
c. Florestone Products Co., Inc.
d. Stern-Williams Co., Inc.
e. Swan Corp.

6. Water Coolers:
a. Elkay Manufacturing Co.
b. Halsey Taylor; Household International Co.
c. Oasis
d. Haws

7. Toilet Seats:
a. Bemis Mfg. Co.
b. Beneke Div.; Sanderson Plumbing Products, Inc.
c. Church Seat Co.
d. Kohler Co.
e. Olsonite Corp.
f. Sperzel Industries, Inc.

8. Flushometers:
a. Sloan Valve Company.
b. Zurn Plumbing Products Group; Commercial Brass Operation.

9. Commercial/Residential Faucets:
a. Chicago Faucet Co.
b. Elkay Manufacturing Co.
c. Moen Group; Stanadyne Corp.
d. T & S Brass.

10. Emergency Eyewash and Eyewash/Showers:
a. Bradley Corporation.
b. Chicago Faucets.
c. Encon Safety Products.
d. Guardian Equipment Co.
e. Haws Corporation.
f. Speakman Company.
g. Western Emergency Equipment

11. Supports:
a. Josam Co.
b. Mifab.
c. Smith (Jay R.) Mfg. Co.
d. Wade Div.; Tyler Pipe.
e. Watts, Inc.

f. Zurn Industries, Inc.; Hydromechanics Div.

12. Trap and Supply Insulation:

a. McGuire Manufacturing Co., Inc.

b. Plumberex "Pro-Extreme"

c. TRUEBRO, Inc.

2.2 PLUMBING FIXTURES, GENERAL

A. Provide plumbing fixtures and trim, fittings, other components, and supports as specified in "Plumbing Fixture Data Sheets" at the end of Part 3 of this Section.

2.3 FITTINGS, EXCEPT FAUCETS

A. Fittings General: Unless otherwise specified, provide fittings fabricated of brass, with a polished chrome plated finish.

B. Lavatory Supplies and Stops, Type 1: Loose-key brass angle stop, having 1/2-inch NPS inlet with wall flange and 3/8-inch by 12-inch flexible tubing riser outlet. No plastic stem angle stops are acceptable.

C. Lavatory Traps, Type 1: Cast-brass, 1-1/4-inch by 1-1/2-inch NPS adjustable P-trap with offset for wheelchair accessibility & cleanout, 17-gage tubular waste to wall, and wall flange.

D. Sink Supplies and Stops, Type 1: Loose-key brass angle stop, having 1/2-inch NPS inlet with wall flange and 1/2-inch by 12-inch flexible tubing riser outlet. No plastic stem angle stops are acceptable.

E. Sink Traps, Type 1: Cast-brass, 1-1/2-inch NPS adjustable P-trap with offset for wheelchair accessibility & cleanout, 17-gage tubular waste to wall, and wall flange.

F. Sink Continuous Wastes, Type 1: Polished chrome-plated, tubular brass, 1-1/2 inches, 17 gage, with brass nuts on slip inlets, and of configurations indicated.

G. Supply and drain plumbing service fittings not listed above shall be as specified and as scheduled.

H. Fittings installed concealed inside a plumbing fixture or within wall construction may be without chrome plate finish.

I. Escutcheons: Wall flange with setscrew.

J. Provide fittings specified as part of a fixture description, in lieu of fitting requirements above.

2.4 TOILET SEATS

A. General: Provide toilet seats compatible with water closets, and of type, color, and features indicated.

B. Toilet Seats, Type 1: Heavy-duty, commercial/industrial type, elongated, open front, solid plastic, with check hinge.

2.5 PLUMBING FIXTURE SUPPORTS

A. Supports: ASME A112.6.1M, categories and types as required for wall-hanging fixtures specified, and wall reinforcement.

B. Support categories are:
1. Carriers: Supports for wall-hanging water closets and fixtures supported from wall construction. Water closet carriers shall have an additional faceplate and coupling when used for wide pipe spaces. Provide tiling frame or setting gage with carriers for wall-hanging water closets.
2. Chair Carriers: Supports with steel pipe uprights for wall-hanging fixtures. Urinal chair carriers shall have bearing plates.
3. Chair Carriers, Heavy Duty: Supports with rectangular steel uprights for wall-hanging fixtures.
4. Reinforcement: 2-inch by 4-inch wood blocking between studs or 1/4-inch by 6-inch steel plates attached to studs, in wall construction, to secure floor-mounted and special fixtures to wall.

C. Support Types: Provide support of category specified, of type having features required to match fixture.

D. Provide supports specified as part of fixture description, in lieu of category and type requirements above.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.

B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.
1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.

C. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.

D. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.

E. Install wall-mounting fixtures with tubular waste piping attached to supports.

F. Install floor-mounting, back-outlet water closets attached to building floor substrate and wall bracket and onto waste fitting seals.

G. Install counter-mounting fixtures in and attached to casework.

H. Install fixtures level and plumb according to roughing-in drawings.

I. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.

1. Exception: Use ball, gate, or globe valves if supply stops are not specified with fixture. Valves are specified in Division 22 Section "General-Duty Valves for Plumbing Piping."

J. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.

K. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.

L. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.

M. Install toilet seats on water closets.

N. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

O. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.

P. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

Q. Install shower flow-control fittings with specified maximum flow rates in shower arms.

R. Install traps on fixture outlets.

1. Exception: Omit trap on fixtures with integral traps.

2. Exception: Omit trap on indirect wastes, unless otherwise indicated.

S. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in Division 22 Section "Common Work Results for Plumbing."

T. Set service basins in leveling bed of cement grout. Grout is specified in Division 22 Section "Common Work Results for Plumbing."

U. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 07 Section "Joint Sealants."

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

3.4 FIELD QUALITY CONTROL

A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.

B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.

C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.

E. Install fresh batteries in sensor-operated mechanisms.

3.5 ADJUSTING

A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.

B. Operate and adjust disposers, hot-water dispensers, and controls. Replace damaged and malfunctioning units and controls.

C. Adjust water pressure at faucets and flushometer valves to produce proper flow and stream.

D. Replace washers and seals of leaking and dripping faucets and stops.

E. Install fresh batteries in sensor-operated mechanisms.

3.6 CLEANING

A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods

and materials. Do the following:

1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
2. Remove sediment and debris from drains.

B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

3.7 PROTECTION

A. Provide protective covering for installed fixtures and fittings.

B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

3.8 FIXTURE SCHEDULE

A. Provide plumbing fixtures as scheduled on Plumbing Fixture Schedule, sheet P2.01.

END OF SECTION 22 40 00

LHC POLICE DEPARTMENT REHABILITATION

LAKE HAVASU CITY, ARIZONA

ARCHITECT: (DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE)

SELBERG ASSOCIATES, INC.

TODD BRAUTIGAM, A.I.A., NCARB
2130 MESQUITE AVE. SUITE 204
LAKE HAVASU CITY, AZ 86403
(928) 855-6544

PLUMBING ENGINEER:

MAVEN ENGINEERING, ACC

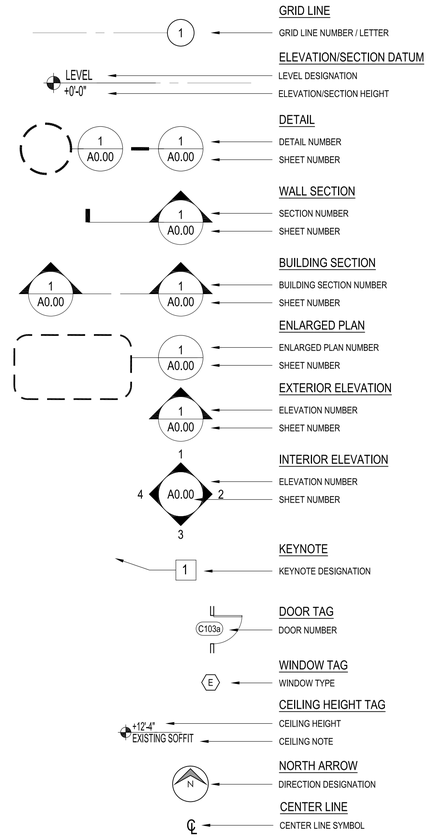
8011 S AVENIDA DEL YAQUI
GUADALUPE, AZ 85283
480-303-0180

FIRE ALARM:

HUNTER DESIGN & CONSULTING, INC.

3S634 BEHRS CRICLE DR. E
WARRENCILLE, IL 60555
360-689-9324

DRAFTING SYMBOLS



SHEET INDEX

SHEET NO.	SHEET TITLE	SUBMITTALS AND DATES: 09-29-2023 PERMIT SET	A 11-03-2023 BID ADDENDUM
ARCHITECTURAL			
A0.01	PROJECT DATA & INFORMATION SHEET	●	●
A2.01	OVERALL FLOOR PLAN - LEVEL 1	●	
A2.01a	PARTIAL FLOOR PLAN A	●	●
A2.01b	PARTIAL FLOOR PLAN B	●	●
A2.01c	PARTIAL FLOOR PLAN C	●	
A2.02	OVERALL FLOOR PLAN - LEVEL 2	●	
A2.02a	PARTIAL FLOOR PLAN A	●	
A2.03	FINISH SCHEDULE	●	●
A4.01	INTERIOR ELEVATIONS	●	
A4.02	INTERIOR ELEVATIONS	●	
A4.03	INTERIOR ELEVATIONS	●	
A7.01	DOOR SCHEDULE	●	●
PLUMBING			
P1.01	PLUMBING FLOOR PLAN - 1ST LEVEL	●	●
P1.02	PLUMBING FLOOR PLAN - 1ST LEVEL	●	●
P1.03	PLUMBING FLOOR PLAN - 1ST LEVEL	●	●
P1.04	PLUMBING FLOOR PLAN - 2ND LEVEL	●	●

GENERAL NOTES

VERIFY ALL DIMENSIONS WITH ARCHITECT PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE OWNER.
ALL CONSTRUCTION SHALL CONFORM TO ALL LOCAL, STATE, & FEDERAL CODES AND REGULATIONS.

ALL SPECIFICATIONS, DIMENSIONS, AND NOTES SHALL HAVE PRECEDENCE OVER SCALE.

NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES.

WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT.

CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION.

WHERE THERE MAY BE A CONFLICT IN THE SPECIFICATIONS AND/OR DRAWINGS THEN THE MORE EXPENSIVE LABOR, MATERIALS, AND EQUIPMENT SHALL BE ASSUMED TO BE REQUIRED AND SHALL BE PROVIDED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER.

WHEN WORK NOT SPECIFICALLY CALLED OUT IS REQUIRED TO COMPLETE THE PROJECT, IT SHALL BE PROVIDED BY THE CONTRACTOR WITH THE BEST MATERIALS AND WORKMANSHIP.

CONTRACTOR IS REQUIRED TO ABIDE BY THE LATEST EDITION OF THE AMERICAN INSTITUTE OF ARCHITECTS GENERAL CONDITIONS AND RELATED DOCUMENTS UNLESS DIRECTED OTHERWISE BY THE OWNER.

THE STARTING OF WORK BY ANY SUBCONTRACTORS SHALL BE CONSIDERED EVIDENCE THAT HE HAS INSPECTED AND ACCEPTED ALL CONDITIONS INVOLVED IN HIS WORK AND FINDS THEM SATISFACTORY.

ALL COMPONENTS, EQUIPMENT, ETC., SHALL BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS AND PRINTED RECOMMENDATIONS.

THIS BUILDING IS TO BE CONSTRUCTED ACCORDING TO ALL INDUSTRY STANDARDS.

ALL EXPOSED SURFACES NOT FACTORY PREFINISHED SHALL BE PAINTED.

UNLESS OTHERWISE NOTED ALL WEATHER EXPOSED SURFACES SHALL HAVE A WEATHER RESISTIVE BARRIER TO PROTECT THE INTERIOR FINISHES.

ALL EXTERIOR OPENINGS SHALL BE FLASHED AND COUNTER FLASHED IN SUCH A MANNER AS TO MAKE THEM WEATHERPROOF.

ALL GYPSUM BOARD SHALL BE TAPED PER THE GYPSUM CONSTRUCTION HANDBOOK AND FASTENED PER THE MANUFACTURERS REQUIREMENTS UNLESS THE STRUCTURAL ENGINEER REQUIRES OTHERWISE OR IF THE FIRE RATED ASSEMBLY REQUIRES OTHERWISE.

SITE INFORMATION

PROJECT LOCATION:	2360 McCULLOCH AVE, LAKE HAVASU CITY, AZ 86403
OWNER NAME:	LAKE HAVASU CITY
PARCEL NUMBER(S):	108-27-041A
LOT AREA:	15.52 ACRES
LEGAL DESCRIPTION:	TRACT: 2293 LAKE HAVASU CITY TR 2293 AMENDED SEC 11, 12 & 14 BLK 3 LOTS 19,20 & 21 108-27-039,040 & 041(108-27- 041A) COMBINED
JURISDICTION:	LAKE HAVASU CITY
EXISTING ZONING:	MU-N/PD:NEIGHBORHOOD/PD OVERLAY
PLANNED LAND USE:	PUB: PUBLIC / SEMI PUBLIC

VICINITY MAP

CODE ANALYSIS

A **PROJECT DESCRIPTION:**
THIS PROJECT CONSISTS OF AN INTERIOR REMODEL OF THE EXISTING BUILDING LOCATED AT 2360 McCULLOCH BLVD. IN THE JURISDICTION OF LAKE HAVASU CITY. THE SCOPE OF WORK WILL INCLUDE THE UPDATING OF FINISHES, SEWER SYSTEM REPAIR, AND JAIL FACILITY DETENTION HARDWARE UPGRADE AND DOMESTIC BACKFLOW REPAIR.

APPLICABLE CODES:
2018 INTERNATIONAL BUILDING CODE (IBC) w/ LAKE HAVASU CITY AMENDMENTS
2018 INTERNATIONAL FIRE CODE (IFC)
2018 INTERNATIONAL PLUMBING CODE (IPC)
2018 INTERNATIONAL MECHANICAL CODE (IMC)
2017 NATIONAL ELECTRICAL CODE (NEC)
2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES (A117.1)
2010 AMERICANS WITH DISABILITIES ACT (ADA)

1. **BASIS OF ANALYSIS:**
2018 INTERNATIONAL BUILDING CODE (IBC) w/ LAKE HAVASU CITY AMENDMENTS

2. **OCCUPANCY CLASSIFICATION (IBC CHAPTER 3):**
GROUP 'B'

3. **CONSTRUCTION TYPE (IBC CHAPTER 6):**
TYPE 5-B (NON RATED) (ALL BUILDINGS)

4. **FIRE SPRINKLERS:**
BUILDING IS EQUIPPED WITH AN EXISTING FIRE SPRINKLER SYSTEM

5. **FIRE ALARM:**
BUILDING IS EQUIPPED WITH AN EXISTING FIRE ALARM SYSTEM

6. **BUILDING HEIGHTS AND ALLOWABLE AREAS (IBC TABLE 503):**
SCOPE OF WORK WILL NOT AFFECT THE ALLOWABLE BUILDING HEIGHT AND AREA

7. **OCCUPANCY SEPARATION (IBC 508.4):**
NO SEPARATION REQUIRED

8. **FIRE RESISTANCE RATING REQUIREMENTS (IBC TABLE 601 AND 602):**

COMPONENT	RATING REQUIRED	FIRE RESISTIVE DESIGN ASSEMBLY
STRUCTURAL FRAME	NONE	-
INTERIOR AND EXTERIOR BEARING WALLS	NONE	-
EXTERIOR NON-BEARING WALLS (X < 30')	NONE	-
INTERIOR NON-BEARING WALLS	NONE	-
FLOOR (AND SECONDARY MEMBERS)	NONE	-
ROOF (AND SECONDARY MEMBERS)	NONE	-

9. **FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS:**
NOT APPLICABLE UNDER THIS WORK

10. **OCCUPANT LOAD FACTOR (IBC TABLE 1004.1.1):**
OCCUPANT LOAD WILL NOT BE AFFECTED BY THE SCOPE OF WORK OF THIS PROJECT

11. **FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS:**
NOT APPLICABLE UNDER THIS WORK

12. **REQUIRED FIRE RESISTANCE OF EXTERIOR WALLS DUE TO PROPERTY LOCATION:**
NONE REQUIRED

13. **PROTECTION OF OPENINGS DUE TO LOCATION ON PROPERTY AND MAX. AREA OF EXTERIOR WALL OPENINGS:**
NONE REQUIRED

14. **SPACES REQUIRING FIRE-RESISTANCE-RATED SEPARATION:**
NONE REQUIRED

15. **EXIT TRAVEL DISTANCE (IBC TABLE 1016.1):**
OCCUPANCY GROUP B: 300' MAX

16. **PLUMBING FIXTURE CALCULATIONS (IBC TABLE 2902.1):**
SCOPE OF WORK DOES NOT AFFECT THE OCCUPANT LOAD, THEREFORE PLUMBING FIXTURE CALCULATION IS NOT AFFECTED BY SCOPE OF WORK

17. **NON-SEPARATED OCCUPANCIES:**
NOT APPLICABLE UNDER THIS WORK

18. **BUILDING ENVELOPE COMPLIANCE:**
NOT APPLICABLE UNDER THIS WORK

SEAL

REGISTERED ARCHITECT
67567
TODD M. BRAUTIGAM
DATE SIGNED 11/03/2023
ARIZONA, U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD

SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-6544

PROJECT NO. 23005

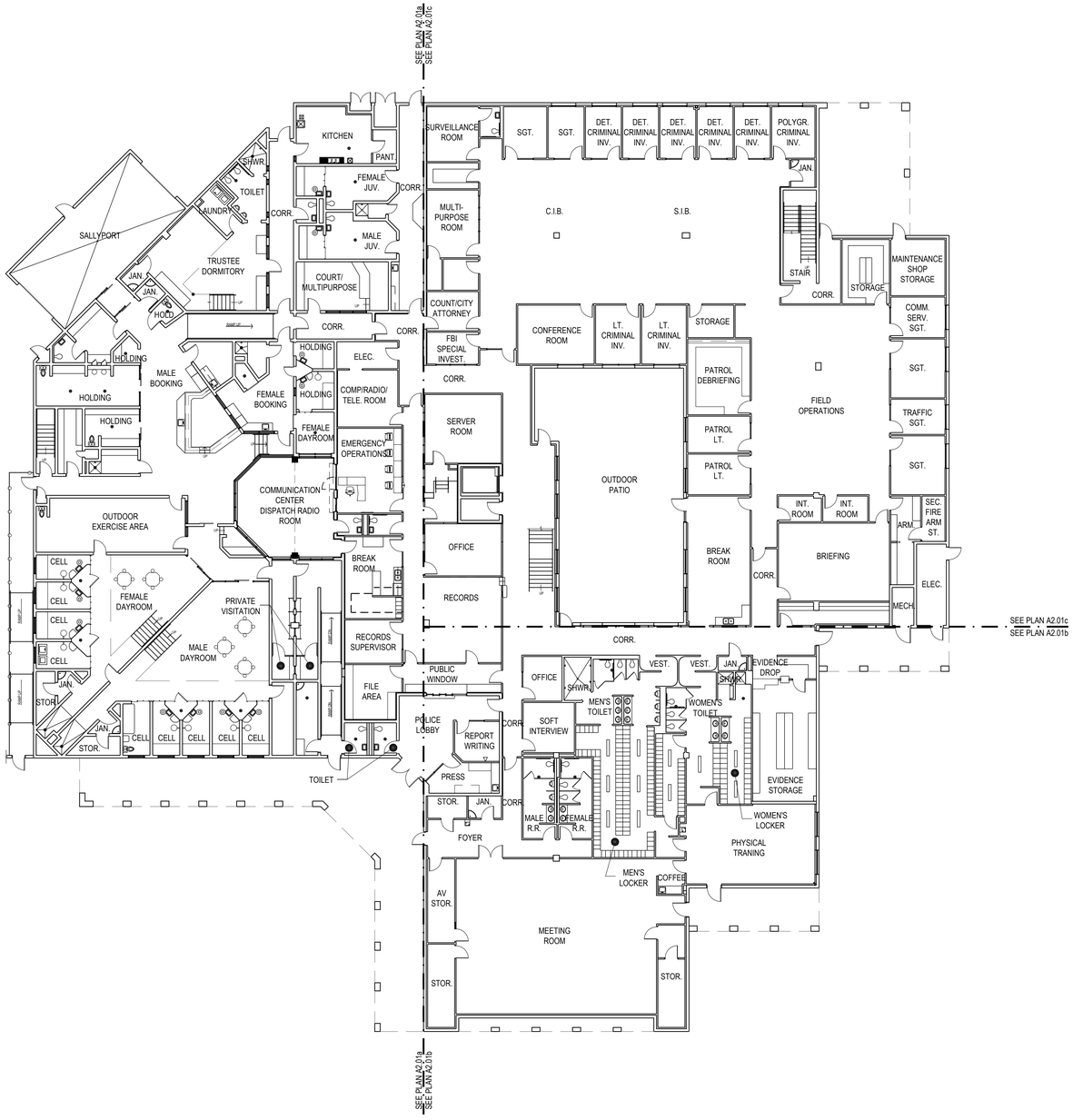
ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

REVISION	ISSUE DATE
A BID ADDENDUM NO.2	11/03/2023

SHEET TITLE: PROJECT DATA & INFORMATION SHEET

SHEET NO. A0.01



1 OVERALL FLOOR PLAN LEVEL 1

1/16"=1'-0"

SEAL

REGISTERED ARCHITECT
67567
TODD M. BRAUTIGAM
DATE SIGNED 10/05/2023
ARIZONA, U.S.A.

PROJECT NAME:

LHC POLICE DEPARTMENT REHABILITATION

2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403

APN: 108-27-041A

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(928) 855-6544

PROJECT NO. 23005

ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

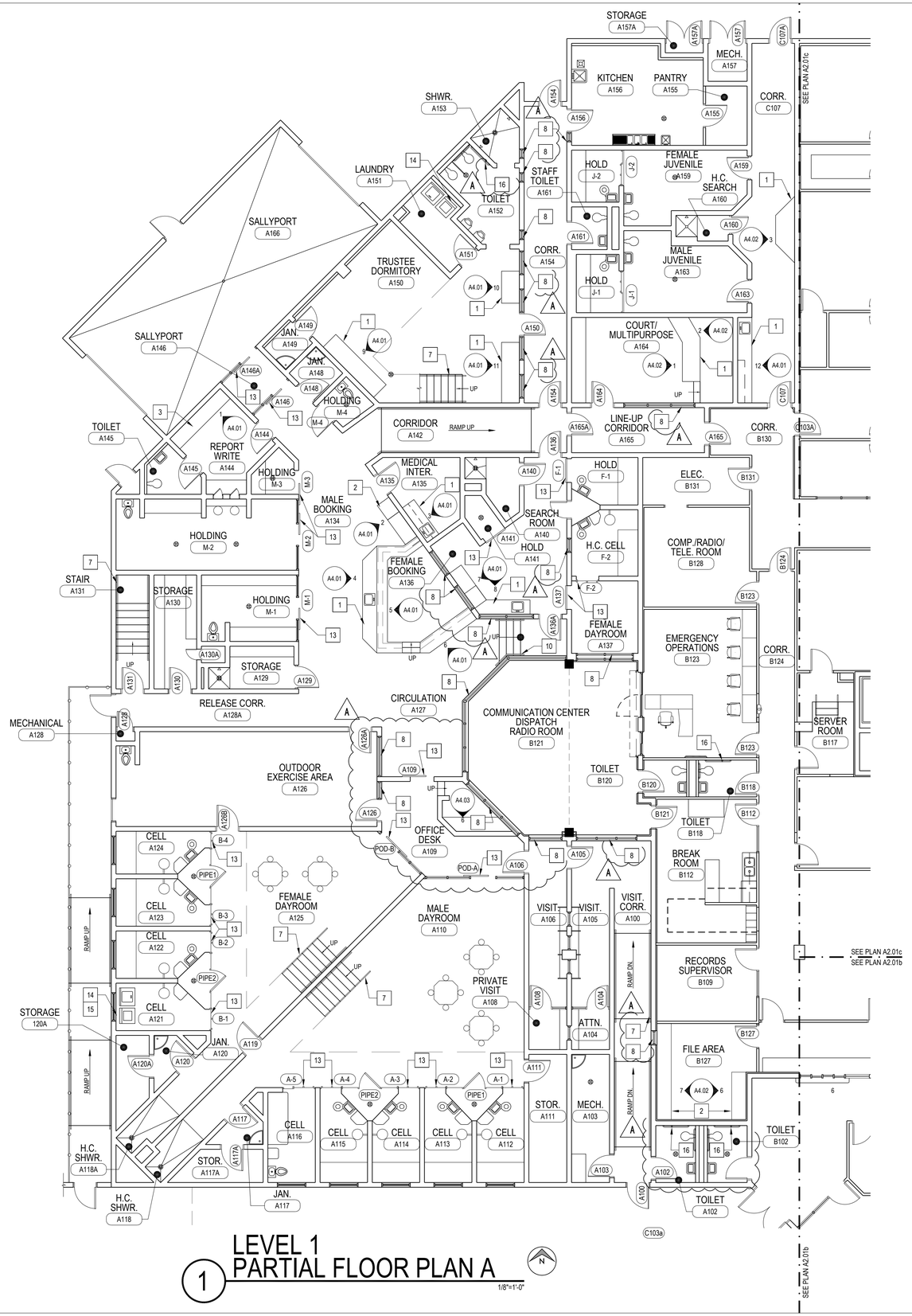
REVISION	ISSUE DATE

SHEET TITLE:

OVERALL FLOOR PLAN
LEVEL 1

SHEET NO.

A2.01



1 LEVEL 1 PARTIAL FLOOR PLAN A

1/8"=1'-0"

GENERAL NOTES

- ALL WORK SHALL CONFORM WITH ALL THE PROVISIONS OF THE 2018 INTERNATIONAL BUILDING CODE AND ALL APPLICABLE CODE ORDINANCES HAVING JURISDICTION.
- GENERAL CONTRACTOR AND ELECTRICAL SUBCONTRACTOR TO CONDUCT A FIELD INSPECTION WITH OWNER'S REPRESENTATIVE AFTER ELECTRICAL ROUGH-IN IS COMPLETE TO ENSURE PROPER OUTLET LOCATION AND HEIGHTS.
- WALL AND CEILING MATERIALS SHALL NOT EXCEED THE FLAME SPREAD CLASSIFICATIONS PER 2018 IBC TABLE 803.1.2
- PROVIDE FIRE BLOCKING AT THE FOLLOWING LOCATIONS PER 2018 IBC SECTION 718.2.2
  A) IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES, AT THE CEILING AND FLOOR LEVELS AT 10 FOOT INTERVALS BOTH VERTICAL AND HORIZONTAL.
  B) AT ALL INTERSECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
- ALL DIMENSIONS ARE TO STRUCTURAL GRID, FACE OF CMU, FACE OF CONCRETE OR FACE OF STUD, UNLESS NOTED OTHERWISE. DIMENSIONS NOTED AS "CLEAR" OR "CLR." ARE TO FACE OF FINISH MATERIAL.
- ALL EXTERIOR HEIGHTS ARE MEASURES FROM THE TOP OF CONCRETE SLAB AT THE PRIMARY STRUCTURE, SHOWN AS 0'-0" ON BUILDING ELEVATIONS.
- WHEN NOTED AS "ALIGN", FACE OF FINISHES ARE TO ALIGN.
- PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED MILLWORK AND EQUIPMENT. PROVIDE SHEET METAL BLOCKING FOR ALL RESTROOM ACCESSORY BLOCKING.
- CONTRACTOR TO PROVIDE THE CORRECT NUMBER OF LIFE SAFETY DEVICES AS REQUIRED BY FIRE MARSHAL.
- ALL DOOR FRAMES TO BE LOCATED 3" MIN. FROM OUTSIDE OF FRAME TO PERPENDICULAR ADJACENT WALL, UNLESS DIMENSIONED OTHERWISE, EXCEPT AT MASONRY WALLS.
- REFER TO INTERIOR ELEVATION PLANS FOR DETAILED INFORMATION.
- REFER TO FINISH FLOOR PLANS FOR FINISH AND FURNITURE SPECIFICATIONS.
- ALL EXTERIOR CONCRETE SURFACES SHALL BE 1/4" BELOW FLOOR SLAB ELEVATION AND SLOPE AWAY FROM THE BUILDING A MINIMUM FOR 1/4" PER FOOT FOR A MINIMUM DISTANCE OF 5'-0". THE MINIMUM SLOPE SHALL BE 1/8" PER FOOT TO A MAXIMUM OF 1/2" PER FOOT. REFER TO CIVIL DRAWINGS FOR EXTENT OF SIDEWALKS AND SPOT ELEVATIONS.

KEYNOTES

1	REMOVE AND REPLACE EXISTING CABINETRY. REFER TO INTERIOR ELEVATIONS FOR FURTHER DETAILS.
2	NEW CABINET PER INTERIOR ELEVATION ON PLAN
3	NEW WORK STATION PER INTERIOR ELEVATION ON PLAN
4	REMOVE EXISTING DOCUMENT WALL STORAGE AND REPLACE WITH UPPER CABINET, SEE INTERIOR ELEVATION 1/A4.03
5	REMOVE EXISTING FRAME AND WIDEN OPENING
6	REMOVE EXISTING WALL CARPET AND PREP SURFACE FOR NEW FINISH PER FINISH SCHEDULE
A 7	PAINT EXISTING STAIR STEEL COMPONENTS, HANDRAILS, AND GUARD RAILS, COLOR TO BE SERIOUS GRAY SW 6256 OR APPROVED EQUAL BY OWNER
8	SAND PRIME AND REPAINT JAIL SIDE OF WINDOW FRAME AND INTERIOR STOREFRONT SYSTEMS. COLOR TO BE SERIOUS GRAY SW 6256 OR APPROVED EQUAL BY OWNER
9	REMOVE FLOOR SINK AND CAP PLUMBING INSTALLATION
10	REPLACE EXISTING WATER FOUNTAIN PER PLUMBING DRAWINGS
11	NEW TRANSACTION WINDOW ADA COMPLIANT, REPLACE TRANSACTION SURFACE TO EXTEND TO BOTH WINDOWS
12	REMOVE EXISTING CABINETRY
13	DOOR HARDWARE AND SLIDING MECHANISMS TO BE REMOVED AND REPLACED, HARDWARE METAL COVER COLOR TO BE SERIOUS GRAY SW 6256
14	DRYER EXHAUST VENT CONNECTION PER PLUMBING DRAWINGS
15	RELOCATE WASHER AND DRYER TOWARDS EXTERIOR WALL
16	PROVIDE 1-1/2" X 18" VERTICAL LONG GRAB BAR. MODEL B6806X18 BY BOBRICK OR APPROVED EQUAL BY OWNER. PROVIDE BACKING WHERE NECESSARY. SEE DETAIL 7/A4.03.

JAIL NOTES

- JAIL LOCKSETS / KEYING SYSTEM TO BE UPDATED
- PODS A & B JAIL CELL DOORS, STEEL PANELS, PERFORATED METAL COMPONENTS, WINDOW SECURITY BARS, AND BUNK BEDS TO BE PAINTED, COLOR TO BE SERIOUS GRAY SW6256 OR APPROVED EQUAL BY OWNER
- TRUSTEE DORMITORY'S BUNK BEDS (8), STEEL TABLES, AND METAL COMPONENTS TO BE PAINTED, COLOR TO BE SERIOUS GRAY SW6256 OR APPROVED EQUAL BY OWNER.

A NOTES: MUNICIPAL WATER SERVICE BACKFLOW REPAIR

- REMOVE AND REPLACE (2) 4" GATE VALVES WITH (2) 4" RISING STEMS GATE VALVES
- REMOVE AND REPLACE 4" BACKFLOW SEE LAKE HAVASU DETAIL NO. 309

SEAL

REGISTERED ARCHITECT — 67567 — TODD M. BRAUTIGAM — DATE SIGNED 10/03/2023 — ARIZONA, U.S.A.

PROJECT NAME:

LHC POLICE DEPARTMENT REHABILITATION

2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403

APN: 108-27-041A

ARCHITECT OF RECORD

SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-6544

PROJECT NO. 23005

ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

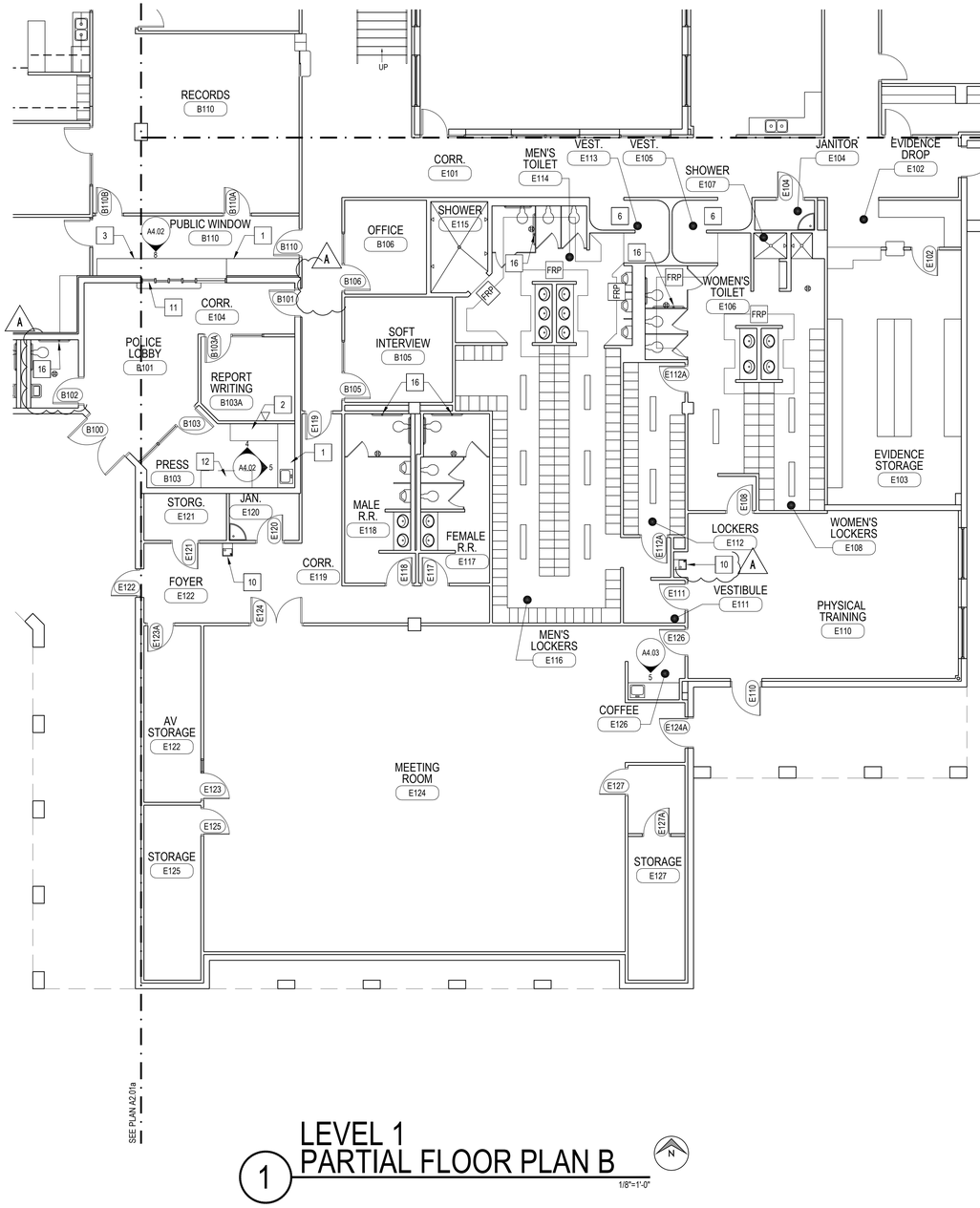
REVISION		ISSUE DATE
A	BID ADDENDUM NO. 2	11/03/2023

SHEET TITLE:

PARTIAL FLOOR PLAN A
LEVEL 1

SHEET NO.

A2.01a



LEVEL 1
PARTIAL FLOOR PLAN B

1/8"=1'-0"

GENERAL NOTES

- ALL WORK SHALL CONFORM WITH ALL THE PROVISIONS OF THE 2018 INTERNATIONAL BUILDING CODE AND ALL APPLICABLE CODE ORDINANCES HAVING JURISDICTION.
- GENERAL CONTRACTOR AND ELECTRICAL SUBCONTRACTOR TO CONDUCT A FIELD INSPECTION WITH OWNER'S REPRESENTATIVE AFTER ELECTRICAL ROUGH-IN IS COMPLETE TO ENSURE PROPER OUTLET LOCATION AND HEIGHTS.
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KEYNOTES

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JAIL NOTES

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NOTES: MUNICIPAL WATER SERVICE BACKFLOW REPAIR

- REMOVE AND REPLACE (2) 4" GATE VALVES WITH (2) 4" RISING STEMS GATE VALVES
- REMOVE AND REPLACE 4" BACKFLOW SEE LAKE HAVASU DETAIL NO. 309

SEAL

REGISTERED ARCHITECT
67567
TODD M. BRAUTIGAM
DATE SIGNED 11/03/2023
ARIZONA, U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD

SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-6644

PROJECT NO. 23005

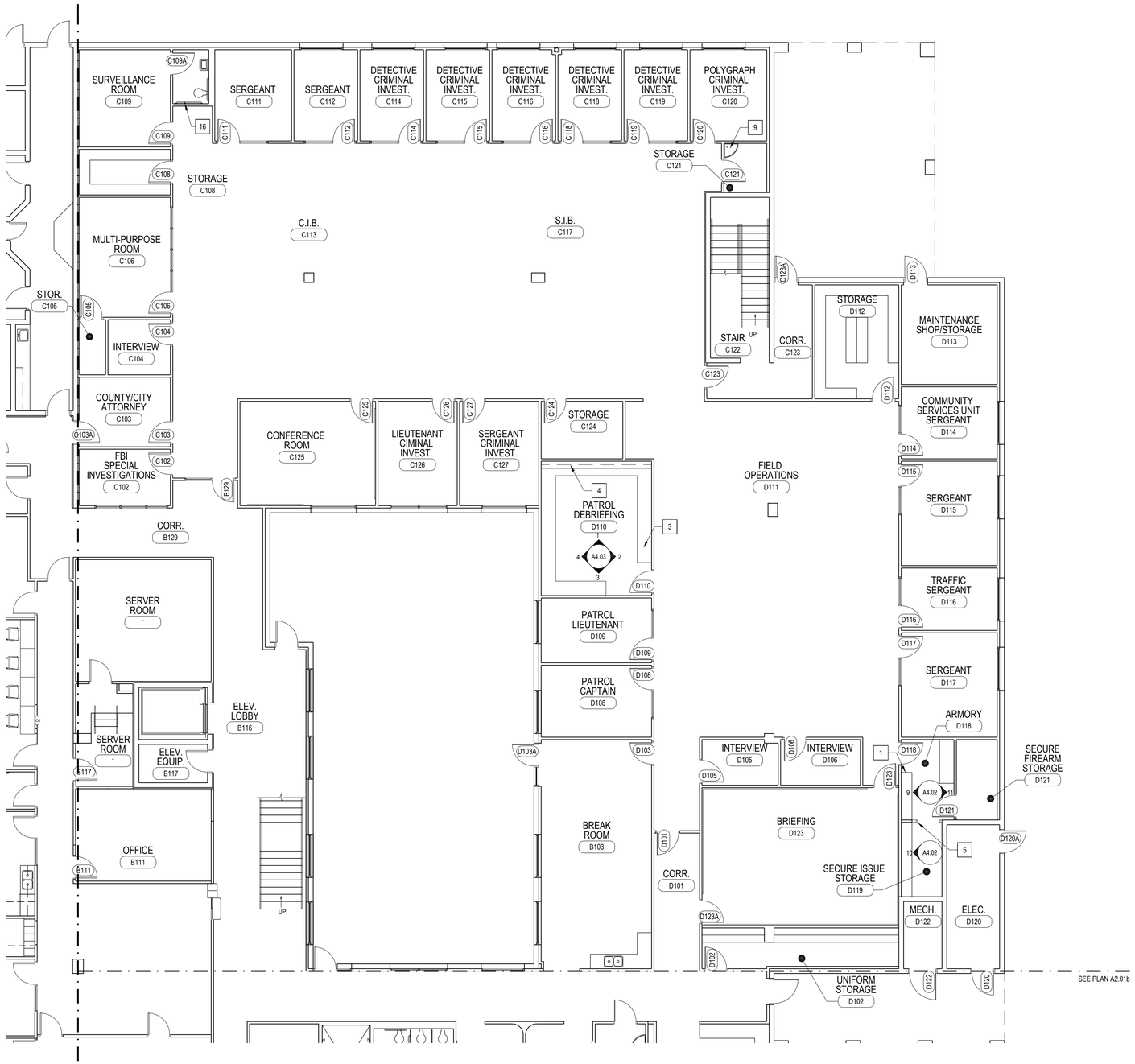
ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

REVISION		ISSUE DATE
A	BID ADDENDUM NO. 2	11/03/2023

SHEET TITLE:
PARTIAL FLOOR PLAN B
LEVEL 1

SHEET NO.
A2.01b



1 LEVEL 1 PARTIAL FLOOR PLAN C

1/8"=1'-0"

GENERAL NOTES

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KEYNOTES

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A

JAIL NOTES

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A

NOTES: MUNICIPAL WATER SERVICE BACKFLOW REPAIR

- REMOVE AND REPLACE (2) 4" GATE VALVES WITH (2) 4" RISING STEMS GATE VALVES
- REMOVE AND REPLACE 4" BACKFLOW SEE LAKE HAVASU DETAIL NO. 309

SEAL

REGISTERED ARCHITECT
CERTIFICATE
67567
TODD M. BRAUTIGAM
DATE SIGNED 11/03/2023
ARIZONA, U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD

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LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-6544

PROJECT NO. 23005

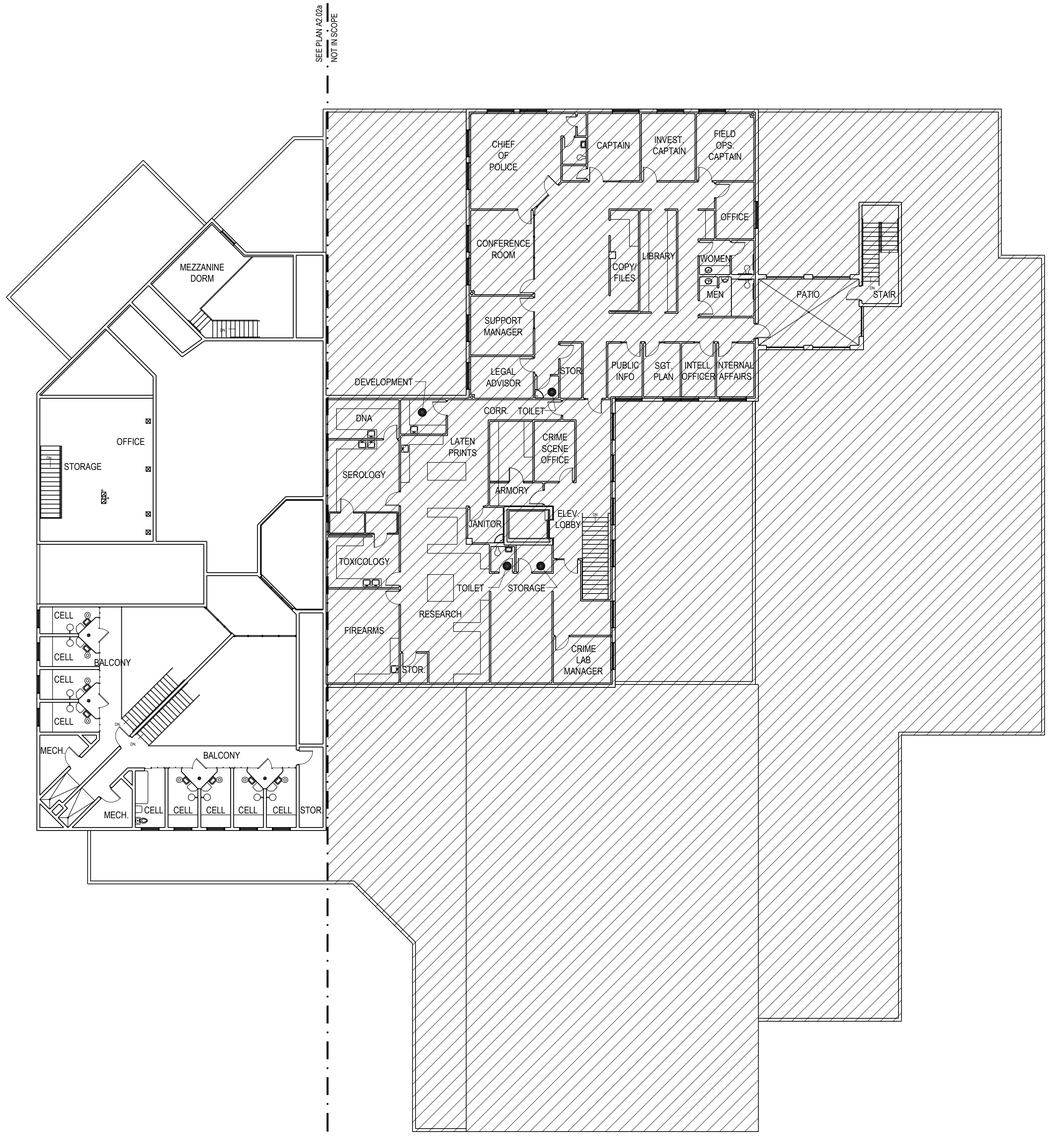
ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

REVISION		ISSUE DATE
A	BID ADDENDUM NO. 2	11/03/2023

SHEET TITLE:
PARTIAL FLOOR PLAN C
LEVEL 1

SHEET NO.
A2.01c



1 OVERALL FLOOR PLAN LEVEL 2

N

1/16"=1'-0"

SEAL

REGISTERED ARCHITECT
TODD M. BRAUTIGAM
07567
DATE SIGNED 10/05/2023
ARIZONA, U.S.A.

PROJECT NAME:

LHC POLICE DEPARTMENT REHABILITATION

2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403

APN: 108-27-041A

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PROJECT NO. 23005

ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

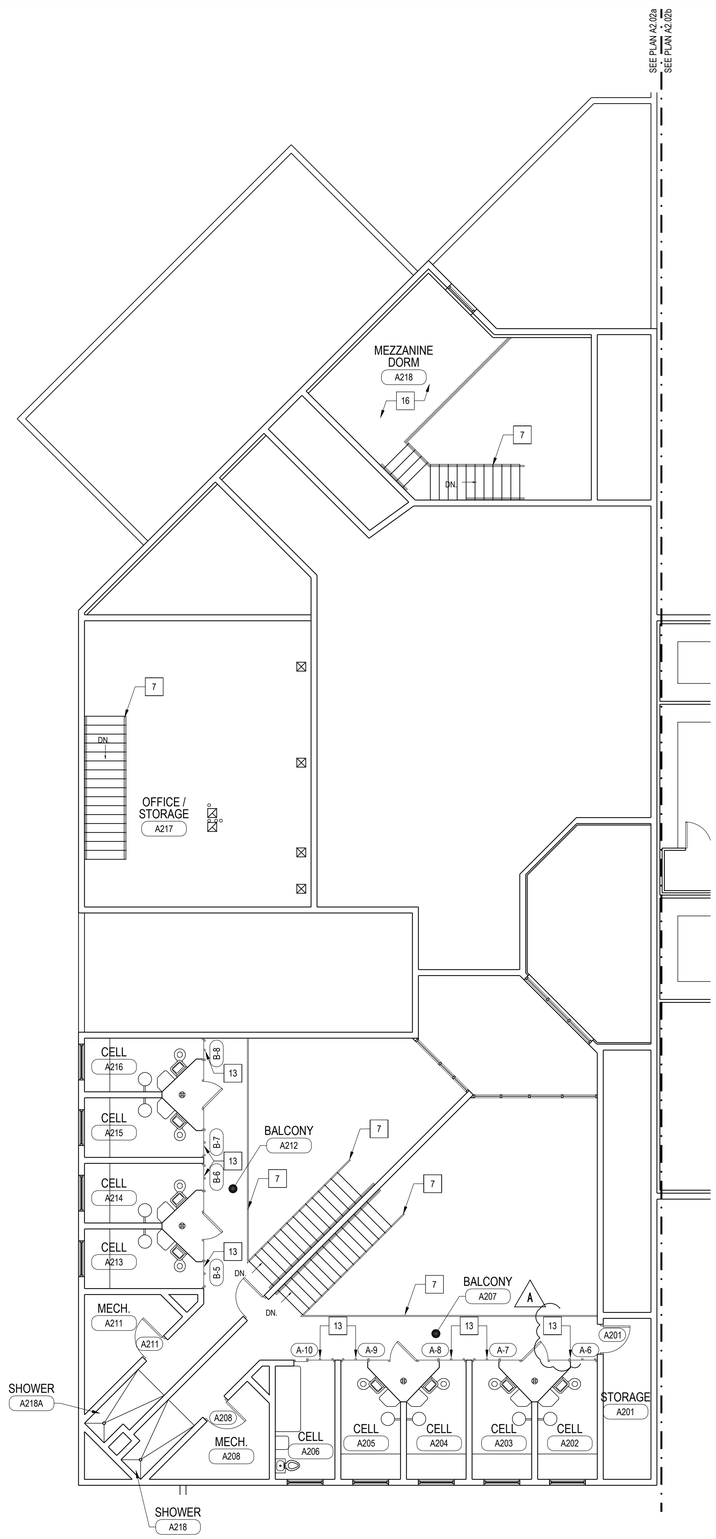
REVISION	ISSUE DATE

SHEET TITLE:

OVERALL FLOOR PLAN
LEVEL 2

SHEET NO.

A2.02



LEVEL 2
PARTIAL FLOOR PLAN A

1 — 1/8"=1'-0"

GENERAL NOTES

- ALL WORK SHALL CONFORM WITH ALL THE PROVISIONS OF THE 2018 INTERNATIONAL BUILDING CODE AND ALL APPLICABLE CODE ORDINANCES HAVING JURISDICTION.
- GENERAL CONTRACTOR AND ELECTRICAL SUBCONTRACTOR TO CONDUCT A FIELD INSPECTION WITH OWNER'S REPRESENTATIVE AFTER ELECTRICAL ROUGH-IN IS COMPLETE TO ENSURE PROPER OUTLET LOCATION AND HEIGHTS.
- WALL AND CEILING MATERIALS SHALL NOT EXCEED THE FLAME SPREAD CLASSIFICATIONS PER 2018 IBC TABLE 803.1.2
- PROVIDE FIRE BLOCKING AT THE FOLLOWING LOCATIONS PER 2018 IBC SECTION 718.2.2
  A) IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES, AT THE CEILING AND FLOOR LEVELS AT 10 FOOT INTERVALS BOTH VERTICAL AND HORIZONTAL.
  B) AT ALL INTERSECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
- ALL DIMENSIONS ARE TO STRUCTURAL GRID, FACE OF CMU, FACE OF CONCRETE OR FACE OF STUD, UNLESS NOTED OTHERWISE. DIMENSIONS NOTED AS "CLEAR" OR "CLR." ARE TO FACE OF FINISH MATERIAL.
- ALL EXTERIOR HEIGHTS ARE MEASURES FROM THE TOP OF CONCRETE SLAB AT THE PRIMARY STRUCTURE, SHOWN AS 0'-0" ON BUILDING ELEVATIONS.
- WHEN NOTED AS "ALIGN", FACE OF FINISHES ARE TO ALIGN.
- PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED MILLWORK AND EQUIPMENT. PROVIDE SHEET METAL BLOCKING FOR ALL RESTROOM ACCESSORY BLOCKING.
- CONTRACTOR TO PROVIDE THE CORRECT NUMBER OF LIFE SAFETY DEVICES AS REQUIRED BY FIRE MARSHAL.
- ALL DOOR FRAMES TO BE LOCATED 3" MIN. FROM OUTSIDE OF FRAME TO PERPENDICULAR ADJACENT WALL, UNLESS DIMENSIONED OTHERWISE, EXCEPT AT MASONRY WALLS.
- REFER TO INTERIOR ELEVATION PLANS FOR DETAILED INFORMATION.
- REFER TO FINISH FLOOR PLANS FOR FINISH AND FURNITURE SPECIFICATIONS.
- ALL EXTERIOR CONCRETE SURFACES SHALL BE 1/4" BELOW FLOOR SLAB ELEVATION AND SLOPE AWAY FROM THE BUILDING A MINIMUM FOR 1/4" PER FOOT FOR A MINIMUM DISTANCE OF 5'-0". THE MINIMUM SLOPE SHALL BE 1/8" PER FOOT TO A MAXIMUM OF 1/2" PER FOOT, REFER TO CIVIL DRAWINGS FOR EXTENT OF SIDEWALKS AND SPOT ELEVATIONS.

KEYNOTES

1	REMOVE AND REPLACE EXISTING CABINETRY. REFER TO INTERIOR ELEVATIONS FOR FURTHER DETAILS.
2	NEW CABINET PER INTERIOR ELEVATION ON PLAN
3	NEW WORK STATION PER INTERIOR ELEVATION ON PLAN
4	REMOVE EXISTING DOCUMENT WALL STORAGE AND REPLACE WITH UPPER CABINET, SEE INTERIOR ELEVATION 1/A4.03
5	REMOVE EXISTING FRAME AND WIDEN OPENING
6	REMOVE EXISTING WALL CARPET AND PREP SURFACE FOR NEW FINISH PER FINISH SCHEDULE
7	PAINT EXISTING STAIR STEEL COMPONENTS, HANDRAILS, AND GUARD RAILS, COLOR TO BE SERIOUS GRAY SW 6256 OR APPROVED EQUAL BY OWNER
8	REMOVE EXISTING ELEVATED OLD CONTROL AREA, REPAIR WALL AND PREP FLOOR TO RECEIVE NEW FINISH PER FINISH SCHEDULE
9	REMOVE FLOOR SINK AND CAP PLUMBING INSTALLATION
10	REPLACE EXISTING WATER FOUNTAIN PER PLUMBING DRAWINGS
11	NEW TRANSACTION WINDOW ADA COMPLIANT, REPLACE TRANSACTION SURFACE TO EXTEND TO BOTH WINDOWS
12	REMOVE EXISTING CABINETRY
13	DOOR HARDWARE AND SLIDING MECHANISMS TO BE REMOVED AND REPLACED, HARDWARE METAL COVER COLOR TO BE SERIOUS GRAY SW 6256
14	DRYER EXHAUST VENT CONNECTION PER PLUMBING DRAWINGS
15	RELOCATE WASHER AND DRYER TOWARDS EXTERIOR WALL
16	NEW EMERGENCY LIGHT IN POD

JAIL NOTES

- JAIL LOCKSETS / KEYING SYSTEM TO BE UPDATED
- PODS A & B JAIL CELL DOORS, STEEL PANELS, PERFORATED METAL COMPONENTS, WINDOW SECURITY BARS, AND BUNK BEDS TO BE PAINTED, COLOR TO BE SERIOUS GRAY SW6256 OR APPROVED EQUAL BY OWNER
- TRUSTEE DORMITORY'S BUNK BEDS (8), STEEL TABLES, AND METAL COMPONENTS TO BE PAINTED, COLOR TO BE SERIOUS GRAY SW6256 OR APPROVED EQUAL BY OWNER.

A

NOTES: MUNICIPAL WATER SERVICE BACKFLOW REPAIR

- REMOVE AND REPLACE (2) 4" GATE VALVES WITH (2) 4" RISING STEMS GATE VALVES
- REMOVE AND REPLACE 4" BACKFLOW SEE LAKE HAVASU DETAIL NO. 307

SEAL

REGISTERED ARCHITECT
67567
TODD M. BRAUTIGAM
DATE SIGNED 10/09/2023
ARIZONA, U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD

SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
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(928) 855-6544

PROJECT NO. 23005

ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

REVISION		ISSUE DATE
A	BID ADDENDUM NO. 2	11/03/2023

SHEET TITLE:
PARTIAL FLOOR PLAN A
LEVEL 2

SHEET NO.
A2.02a

FINISH SCHEDULE - ZONE A (JAIL)

ROOM NAME	ROOM #	FLOOR						BASE				WALL A										WALL B										WALL C										WALL D										REMARKS
		MATERIAL FINISH						MATERIAL FINISH				MATERIAL FINISH										MATERIAL FINISH										MATERIAL FINISH										MATERIAL FINISH										
WALL TAG (A, B, C, D)		CARPET	LVT	CERAMIC TILE	NONE	SEALED	CLEAN	4" RUBBER BASE	6" CERAMIC BASE	NONE	CLEAN	PAINT A (BASE)	PAINT B (ACCENT)	PAINT C (ACCENT)	CERAMIC WALL TILE	SYMMETRIX FRP	4' HT. FRP	NONE	PAINTED	CLEAN	NONE	PAINT A (BASE)	PAINT B (ACCENT)	PAINT C (ACCENT)	CERAMIC WALL TILE	SYMMETRIX FRP	4' HT. FRP	NONE	PAINTED	CLEAN	NONE	PAINT A (BASE)	PAINT B (ACCENT)	PAINT C (ACCENT)	CERAMIC WALL TILE	SYMMETRIX FRP	4' HT. FRP	NONE	PAINTED	CLEAN	NONE	PAINT A (BASE)	PAINT B (ACCENT)	PAINT C (ACCENT)	CERAMIC WALL TILE	SYMMETRIX FRP	4' HT. FRP	NONE	PAINTED	CLEAN	NONE	
		1	2	3	4	A	B	1	2	A	B	1	2	3	4	5	6	7	A	B	C	1	2	3	4	5	6	7	A	B	C	1	2	3	4	5	6	7	A	B	C	1	2	3	4	5	6	7	A	B	C	
VISITATION CORRIDOR	A100		2				B	1			B	1							A			1							A			1							A			1							A			
RESTROOM	A102			3					2			1							A			1							A			1							A			1							A			REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
MECHANICAL ROOM	A103				4					A								7			C							7			C							7			C							7			C	REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
PRIVATE VISITATION	A104		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAME, SHELF AND STOOL BASE TO BE PAINTED WITH PAINT B (ACCENT)
VISITOR SIDE VISITATION	A105		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAME, SHELF AND STOOL BASE TO BE PAINTED WITH PAINT B (ACCENT)
INMATE SIDE VISITATION	A106		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAME, SHELF AND STOOL BASE TO BE PAINTED WITH PAINT B (ACCENT)
PRIVATE VISITATION	A108		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAME, SHELF AND STOOL BASE TO BE PAINTED WITH PAINT B (ACCENT)
PASS-THROUGH (CORRIDOR AREA)	A109		2				B	1			B	1							A			1							A			1							A			1							A			
PASS-THROUGH (ELEVATED DESK AREA)	A109		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAME TO BE PAINTED WITH PAINT B (ACCENT)
STORAGE	A111				4					A								7			C							7			C							7			C							7			C	
POD A CELL (MALE)	A1 - A10				4					A		1							A			1							A			1							A			1							A			
POD A MALE DAYROOM	A110				4					A		1							A			1							A			1							A			1							A			
PIPE ROOM BETWEEN CELLS (POD A)					4					A								7			C							7			C							7			C							7			C	REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
PIPE ROOM BETWEEN CELLS (POD A)					4					A								7			C							7			C							7			C							7			C	REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
POD B CELL (FEMALE)	B1-B8				4					A		1							A			1							A			1							A			1							A			
POD B FEMALE DAYROOM	A125				4					A		1							A			1							A			1							A			1							A			
PIPE ROOM BETWEEN CELLS (POD B)					4					A								7			C							7			C							7			C							7			C	REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
PIPE ROOM BETWEEN CELLS (POD B)					4					A								7			C							7			C							7			C							7			C	REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
JANITOR ROOM	A117				4					A								7			C							7			C							7			C							7			C	
STORAGE	A117A				4					A								7			C							7			C							7			C							7			C	
H.C. SHOWER	A118			3						A					4					B								7			C				4					B					4					B		
H.C. SHOWER	A118A			3						A					4					B								7			C				4					B					4					B		
JANITOR ROOM	A120				4					A								7			C							7			C							7			C							7			C	
STORAGE	A120A				4					A								7			C							7			C							7			C							7			C	
OUTDOOR EXERCISE AREA	A126				4					A		1							A			1							A			1							A			1							A			
CIRCULATION (TO MALE HOLDING)	A127		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAME TO BE PAINTED WITH PAINT B (ACCENT)
MECHANICAL CLOSET	A128				4					A								7			C							7			C							7			C							7			C	
RELEASE CORRIDOR (TO EXTERIOR HALL)	A128A		2				B	1			B	1							A			1							A			1							A			1							A			
STORAGE	A129		2				B	1			B	1							A			1							A			1							A			1							A			
STORAGE SHOWER	A129A			3					2		B				4					B								7			C				4					B					4					B		
STORAGE	A130		2				B	1			B	1							A			1							A			1							A			1							A			
MECHANICAL CLOSET	A130A				4					A								7			C							7			C							7			C							7			C	
STORAGE/OFFICE	A131				4					A		1							A			1							A			1							A			1							A			
HOLDING	M-1				4					A		1							A			1							A			1							A			1							A			WINDOW FRAME, SHELF AND STOOL BASE TO BE PAINTED WITH PAINT B (ACCENT) REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
HOLDING	M-2				4					A		1							A			1							A			1							A			1							A			WINDOW FRAME, SHELF AND STOOL BASE TO BE PAINTED WITH PAINT B (ACCENT) REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
HOLDING (SOFT WF)	M-3				4					A								7			C							7			C							7			C							7			C	REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
MALE BOOKING	A134		2				B	1			B	1							A			1							A			1							A			1							A			
MEDICAL INTERVIEW	A135		2				B	1			B	1							A			1							A			1							A			1							A			
FEMALE BOOKING	A136		2				B	1			B	1							A			1							A			1							A			1							A			
	F-1				4					A		1							A			1							A			1							A			1							A			
	F-2				4					A		1							A			1							A			1							A			1							A			
FEMALE DAYROOM	A137				4					A		1							A			1							A			1							A			1							A			REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
SEARCH ROOM	A140				4					A		1							A			1							A			1							A			1							A			
SEARCH ROOM SHOWER	A140			3			B		2		B				4					B								7			C				4					B					4					B		
HOLDING SOFT WF	A141				4					A								7			C							7			C							7			C							7			C	REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
CORRIDOR	A142		2				B	1			B	1							A			1							A			1							A			1							A			HANDRAILS TO BE PAINTED WITH PAINT B (ACCENT)
REPORT WRITE	A144		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAME, SHELF AND STOOL BASE TO BE PAINTED WITH PAINT B (ACCENT)
RESTROOM	A145		2				B	1			B	1							A			1							A			1							A			1							A			
SALLYPORT ACCESS	A146				4					A		1							A			1							A			1							A			1							A			
JANITOR ROOM	A148				4					A		1							A			1							A			1							A			1							A			
HOLDING	M-4				4					A		1							A			1							A			1							A			1							A			REPAIR CONCRETE AROUND FLOOR DRAINS, REFER TO PLUMBING PLANS FOR DETAIL
JANITOR ROOM (TRUSTEES)	A149				4					A		1							A			1							A			1							A			1							A			
TRUSTEE DORMITORY	A150				4					A		1							A			1							A			1							A			1							A			WINDOW, BUNKBEDS, TABLE BASE AND STEEL ELEMENTS TO BE PAINTED WITH PAINT B (ACCENT)
LAUNDRY	A151				4					A		1							A			1							A			1							A			1							A			
TOILET	A152			3					2		B	1							A			1							A			1							A			1							A			WINDOW FRAMES, DOOR FRAME, AND TOILET PARTITIONS TO BE PAINTED WITH PAINT B (ACCENT)
TRUSTEE SHOWER	A153			3					2		B				4					B					4					B					4					B					4					B		WINDOW FRAMES, DOOR FRAME, AND TOILET PARTITIONS TO BE PAINTED WITH PAINT B (ACCENT)
CORRIDOR TO EXTERIOR	A154		2				B	1			B	1							A			1							A			1							A			1							A			WINDOW FRAMES AND DOOR FRAME TO BE PAINTED WITH PAINT B (ACCENT)
PANTRY	A155				4					A		1							A			1							A			1							A			1							A			
KITCHEN	A156				4					A		1							A			1							A			1							A			1							A			REMOVE AND REPLACE QUARRY CERAMIC FLOOR AROUND FLOOR DRAIN AND FLOOR SINK. DOOR FRAME AND WINDOW TO BE PAINTED WITH PAINT B (ACCENT)
MECHANICAL ROOM	A157				4					A								7			C							7			C							7			C							7			C	
STORAGE ROOM	A157A				4					A								7			C							7			C							7			C							7			C	
FEMALE JUV HOLDING CELL	A159		2				B	1			B	1							A			1							A			1							A			1							A			
	J-2				4					A		1							A			1							A			1							A			1							A			
SEARCH ROOM	A160				4				2		B	1							A			1							A			1							A			1							A			
SHOWER SEARCH ROOM	A160			3			B		2		B				4					B								7			C				4					B					4					B		
STAFF RESTROOM	A161			3			B		2		B	1							A			1							A			1							A			1							A			
MALE JUV HOLDING CELL	A163		2				B	1			B	1							A			1							A			1							A			1							A			
	J-1				4					A		1							A			1							A			1							A			1							A			
COURT MULTIPURPOSE	A164	1	2				B	1			B	1							A			1							A			1							A			1							A			
COURT MULTIPURPOSE (ELEVATED AREA)	A164	1					B	1			B	1							A			1							A			1							A			1							A			
LINE-UP CORRIDOR	A165		2				B	1			B	1							A			1							A			1							A			1							A			
STORAGE	A201				4					A								7			C							7			C							7			C							7			C	
CORRIDOR	C107		2				B	1			B	1							A			1							A			1							A			1							A			
H.C. SHOWER	A218			3					2	A					4					B								7			C				4					B					4					B		
H.C. SHOWER	A218A			3					2	A					4					B								7			C				4					B					4					B		

FINISH NOTES

- CONTRACTORS TO SUBMIT ONE PRODUCT SAMPLE ILLUSTRATING THE PROFILE AND COLOR OF EACH FINISH. ALL PROPOSED EQUALS TO BE SUBMITTED FOR OWNER'S APPROVAL WITH MANUFACTURER LITERATURE AND INSTALLATION INSTRUCTIONS.
- REFER TO DOOR FINISH SCHEDULE FOR INTERIOR DOORS TREATMENT.
- PRIME AND PAINT ALL EXPOSED GYPSUM BOARD SURFACES TO MEET OR EXCEED PRO-INDUSTRIAL ACRYLIC COATING SYSTEM AS MANUFACTURED BY SHERWIN WILLIAMS, 11840 N. 24TH DRIVE, SUITE 102, PHOENIX, AZ, 85029, (602) 758-4871, OR APPROVED EQUAL BY THE OWNER.
- ALL PAINTED INTERIOR GYPSUM BOARD WALLS TO RECEIVE ONE COAT OF PRIMER AND ONE COAT OF SATIN LATEX ENAMEL PAINT
- MOISTURE RESISTANT GYPSUM BOARD IN RESTROOMS SHALL RECEIVE 1 COAT PRIMER W/ 2 COATS SEMI- GLOSS ENAMEL PAINT.
- CABINETRY ELEVATIONS ARE SCHEMATIC IN DESIGN, VERIFY ALL CABINETRY DESIGN W/ OWNER PRIOR TO FABRICATION.

MATERIALS:

- GYPSUM BOARD SHALL BE, TYPE 'X' OR 'MR', AS MANUFACTURED BY CERTAINTEED, OR APPROVED EQUAL BY THE OWNER.
- RUBBER BASE SHALL BE AS MANUFACTURED BY MOHAWK GROUP 4" RUBBER COVE WALL BASE COLOR NIGHT SKIES #002 OR APPROVED EQUAL BY OWNER.
- RUBBER FLOORING TO BE MANUFACTURED BY RUBBER FLOORING DIRECT, RUBBER FLOORING ROLLS, COLOR BLACK OR APPROVED EQUAL BY OWNER
- INTERIOR PAINT TO BE MANUFACTURED BY SHERWIN WILLIAMS OR APPROVED EQUAL BY OWNER.
  - PAINT A (BASE): PASSIVE SW 7064
  - PAINT B (ACCENT): SERIOUS GRAY SW 6256
  - PAINT C (ACCENT 2): SLEEPY HOLLOW SW 9145
- FULL WALL HEIGHT FRP PANELS SHALL BE SYMMETRIX SMART SEAM FRP, SUBWAY HORIZONTAL AS MANUFACTURED BY MARLITE. COLOR WHITEWITH WHITE GROUT LINES SS100-G63 OR APPROVED EQUAL BY OWNER.
- 4' HEIGHT FRP PANELS SHALL BE STANDARD FRP AS MANUFACTURED BY MARLITE COLOR P 145 SILVER OR APPROVED EQUAL BY OWNER.
- CERAMIC WALL TILE SHALL BE MANUFACTURED BY DALTILE. STYLE SUBWAY TILE, COLOR MATTE ARCTIC WHITE 3"X6" OR APPROVED EQUAL BY OWNER
- CERAMIC FLOOR TILE SHALL BE MANUFACTURED BY DALTILE. STYLE REMINISCENT, RECLAIMED GRAY, 12"X24" OR APPROVED EQUAL BY OWNER
- SHOWER FLOOR TILE SHALL BE MANUFACTURED BY DALTILE, STYLEREKINDLE, COLOR MEDIUM GRAY, SIZE 24"X24" OR APPROVED EQUAL BY OWNER
- LVT SHALL BE MANUFACTURED BY ARMSTRONG FLOORING, STYLE NATURAL CREATIONS WITH DIAMOND, COLOR BRACO MORTAR: NA331 OR APPROVED EQUAL BY OWNER
- TOILET PARTITIONS TO BE POWDER COATED, COLOR TO BE PAINT B: SERIOUS GRAY SW 6256
- FLOOR TRANSITION (LOCATE FLOOR FINISH TRANSITIONS UNDER THE DOOR PANEL WHEN FINISH TRANSITIONS OCCUR AT DOORWAY)
  - CARPET TO LVT: RUBBER TRANSITION STRIP BURKE MERCER, FUSION TRANSITION STRIP 721 OR APPROVED EQUAL BY OWNER.
  - CERAMIC TILE TO LVT: RUBBER TRANSITION STRIP BURKE MERCER 710 CARPET TO RESILIENT TRANSITION OR APPROVED EQUAL BY OWNER.
  - LVT TO VCT/CONCRETE: RUBBER TRANSITION STRIP BURKE MERCER, DRY BACK UNDERSLUNG REDUCER 735 OR APPROVED EQUAL BY OWNER.
- CABINETRY PLASTIC LAMINATE FINISH SALL BE MANUFACTURED BY FORMICA, CITADEL WARP 5882, MATTE FINISH OR APPROVED EQUAL BY OWNER
- COUNTERTOP SOLID SURFACE SHALL BE MANUFACTURED BY CAESAR STONE, #6600 NOUGAT QUARTZ OR APPOVED EQUAL BY OWNER

SEAL

REGISTERED ARCHITECT
CERTIFICATE 67567
TODD M. BRAUTIGAM
DATE SIGNED 11/06/2023
ARIZONA U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD
SELBERG ASSOCIATES INC.
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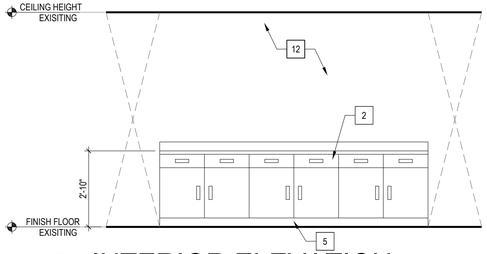
PROJECT NO. 23005
ISSUED FOR: PERMIT SET
ISSUED DATE: SEPTEMBER 29, 2023

REVISION		ISSUE DATE
A	BID ADDENDUM NO. 2	11/03/2023

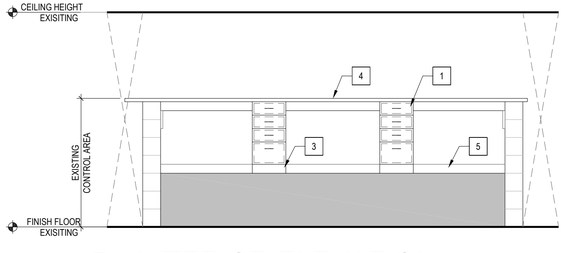
SHEET TITLE: FINISH SCHEDULE

SHEET NO. A2.03



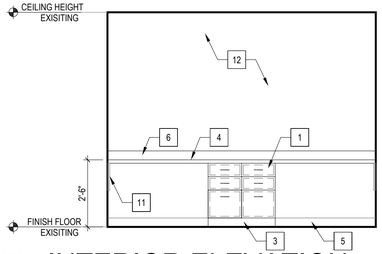
9 INTERIOR ELEVATION

3/8"=1'-0"



5 INTERIOR ELEVATION

3/8"=1'-0"



1 INTERIOR ELEVATION

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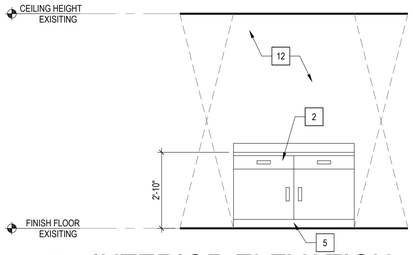
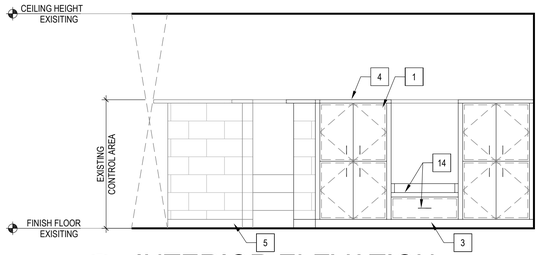


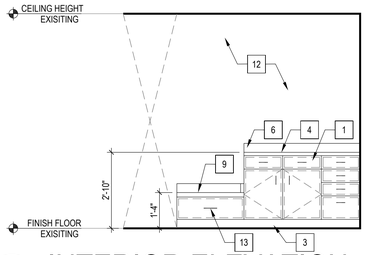
10 INTERIOR ELEVATION

3/8"=1'-0"



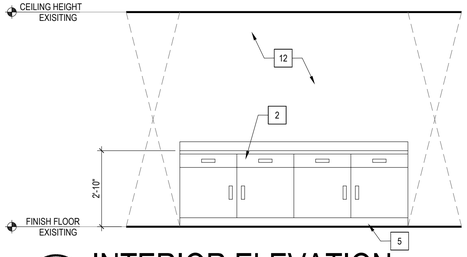
6 INTERIOR ELEVATION

3/8"=1'-0"



2 INTERIOR ELEVATION

3/8"=1'-0"



11 INTERIOR ELEVATION

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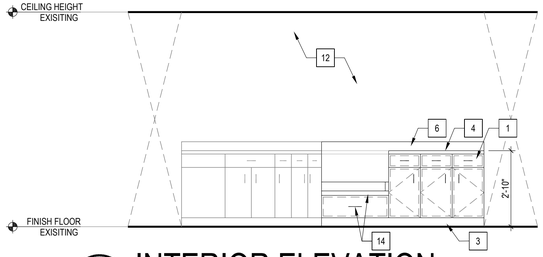

7 INTERIOR ELEVATION

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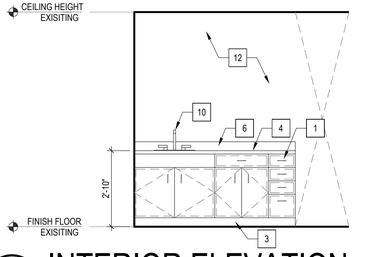

3 INTERIOR ELEVATION

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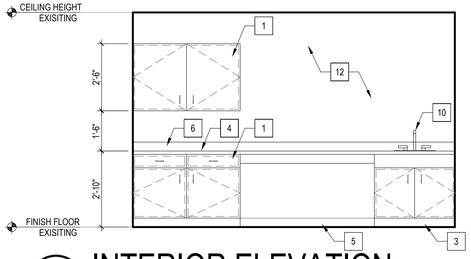
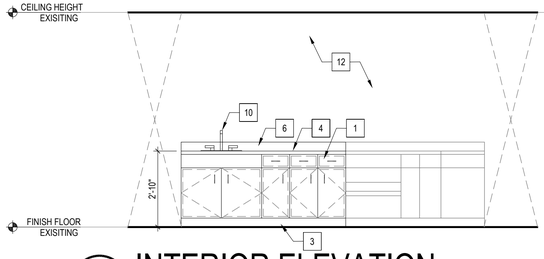


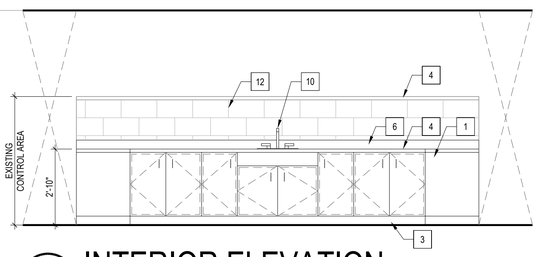
12 INTERIOR ELEVATION

3/8"=1'-0"



8 INTERIOR ELEVATION

3/8"=1'-0"



4 INTERIOR ELEVATION

3/8"=1'-0"

KEYNOTES

1	UPPER AND LOWER CABINETRY, FINISH PER CABINET NOTES
2	STEEL BASE CABINETS PER CABINET NOTES
3	4" TOE KICK
4	SOLID SURFACE COUNTERTOP O/3/4" MDF BASE, FINISH PER CABINET NOTES
5	4" WALL BASE AS SCHEDULED PER FINISH NOTES
6	BACK SPLASH TO BE SOLID SURFACE 4" X 1/2", FINISH PER CABINET NOTES
7	COPY MACHINE BY OWNER
8	BULLET RESISTANT TRANSACTION WINDOW PER SPECIFICATIONS
9	STAINLESS STEEL DETENTION SEAT
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12	PAINTED SURFACE, COLOR PER FINISH SCHEDULE AND NOTES
13	DETENTION HANDCUFF SECURITY BAR
14	EXISTING STAINLESS STEEL DETENTION SEAT AND HANDCUFF SECURITY BAR TO BE REUSED
15	EXISITING FURNITURE TO BE REFINISHED WITH PLAM TO MATCH CABINETRY PER FINISH NOTES
16	OPENING FOR MINI FRIDGE BY OWNER

CABINET NOTES

- VERIFY ALL CABINET CONFIGURATIONS WITH OWNER.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO OWNER FOR REVIEW.
- REVIEW WITH CONTRACTOR AND OWNER PRIOR TO INSTALLATION.
- ADJUSTABLE SHELVES TO BE PLASTIC LAMINATE O/1" PARTICLE BOARD. TYP.
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- COUNTERTOP SOLID SURFACE SHALL BE MANUFACTURED BY CAESAR STONE, #6600 NOUGAT QUARTZ OR APPOVED EQUAL BY OWNER
- STEEL BASE CABINETS TO BE AS MANUFACTURED BY INSTITUTIONAL CASEWORK INC., CABINETS TO BE LOCKABLE, COLOR 107 SLATE GRAY OR APPROVED EQUAL BY OWNER.

SEAL

REGISTERED ARCHITECT
CERTIFICATE
67567
TODD M. BRAUTIGAM
DATE SIGNED 10/27/2023
ARIZONA, U.S.A.

PROJECT NAME:

LHC POLICE DEPARTMENT REHABILITATION

2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403

APN: 108-27-041A

ARCHITECT OF RECORD

SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-6644

PROJECT NO. 23005

ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

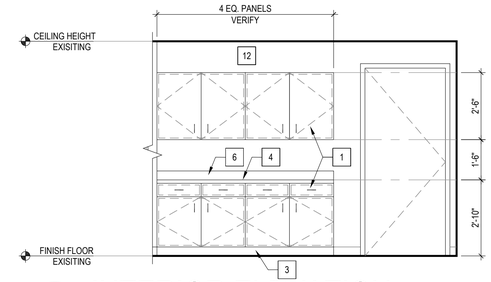
REVISION	ISSUE DATE

SHEET TITLE:

INTERIOR ELEVATIONS

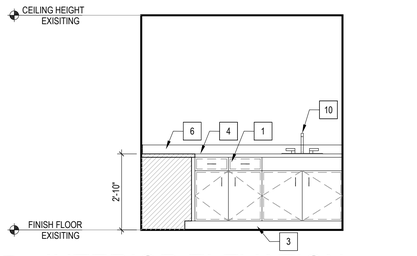
SHEET NO.

A4.01



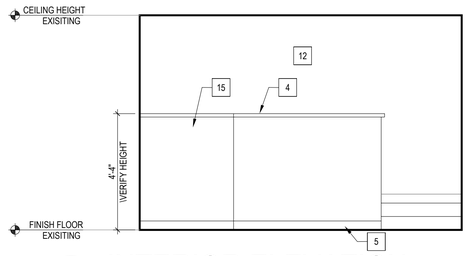
9 INTERIOR ELEVATION

3/8"=1'-0"



5 INTERIOR ELEVATION

3/8"=1'-0"



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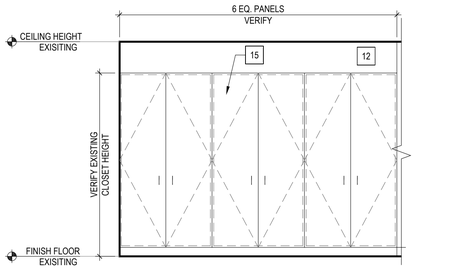

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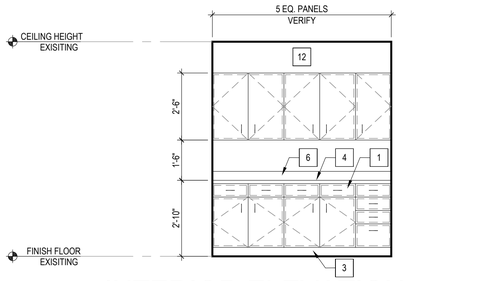

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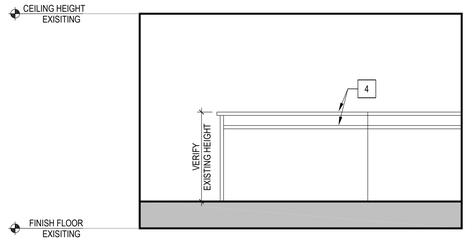

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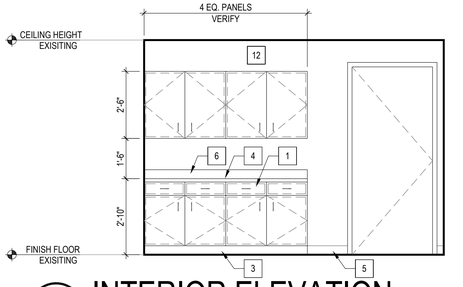

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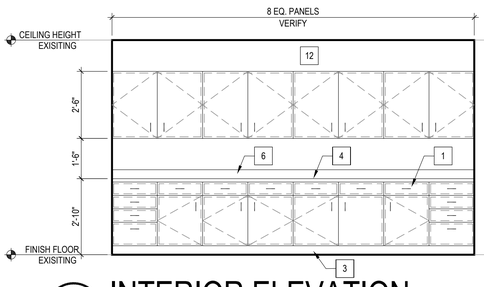

7 INTERIOR ELEVATION

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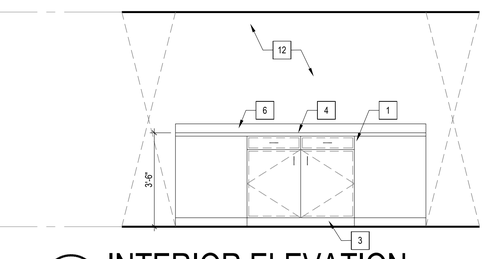

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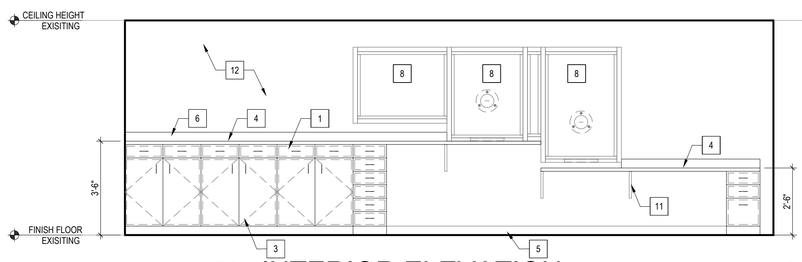

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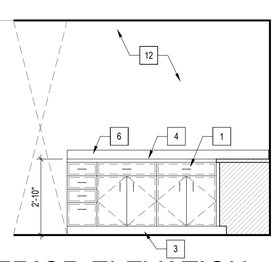

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3/8"=1'-0"

KEYNOTES

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SEAL

REGISTERED ARCHITECT
TODD M. BRAUTIGAM
67567
TODD M. BRAUTIGAM
DATE SIGNED 10/05/2023
ARIZONA, U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD
SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-6644

PROJECT NO. 23005

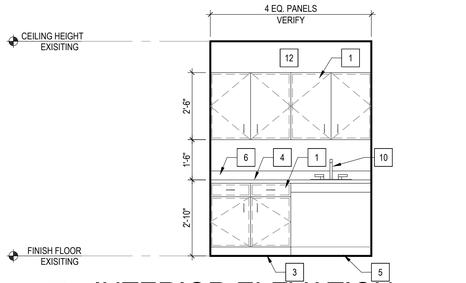
ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

REVISION	ISSUE DATE

SHEET TITLE:
INTERIOR ELEVATIONS

SHEET NO.
A4.02



5 INTERIOR ELEVATION

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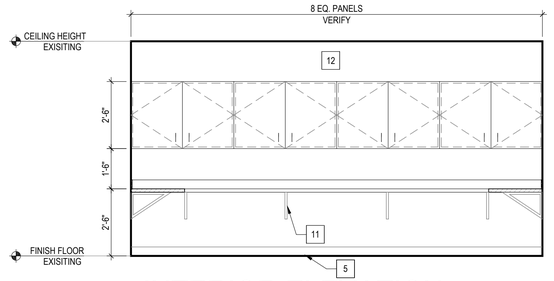
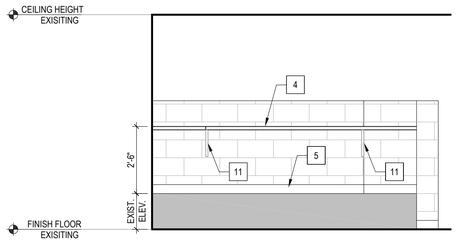


1 INTERIOR ELEVATION

3/8"=1'-0"



6 INTERIOR ELEVATION

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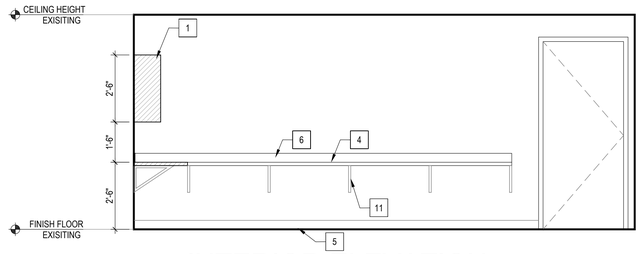

2 INTERIOR ELEVATION

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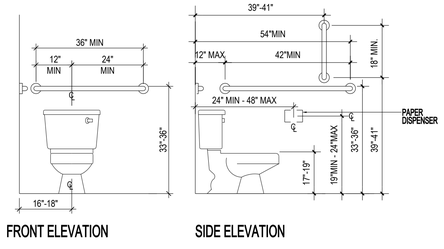
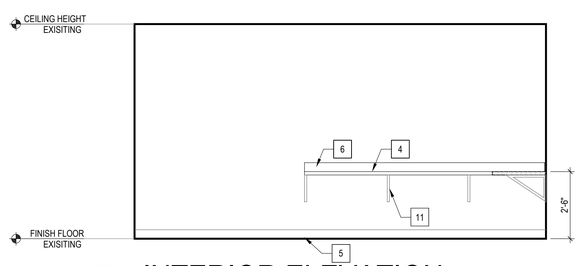


7 GRAB BAR CLEARANCES
DISPENSER OUTLET LOCATION

N.T.S.



3 INTERIOR ELEVATION

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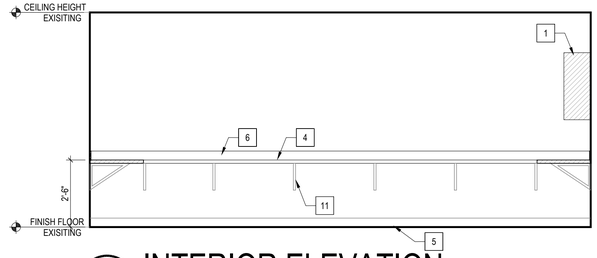

4 INTERIOR ELEVATION

3/8"=1'-0"

KEYNOTES

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SEAL

REGISTERED ARCHITECT
67567
TODD M. BRAUTIGAM
DATE SIGNED 10/30/2023
ARIZONA, U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD
SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-6644

PROJECT NO. 23005

ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

REVISION	ISSUE DATE

SHEET TITLE:
INTERIOR ELEVATIONS

SHEET NO.
A4.03

DOOR SCHEDULE - ZONE A (JAIL)

ROOM NAME	DOOR #	DOOR MATERIAL	FINISH	CLEAN	REFINISH	REPLACE	HARDWARE	REMARK
EXTERIOR DOOR	A100	STEEL	PAINT		X		X	INTERIOR OF DOOR AND JAMB TO BE PAINTED, EXTERIOR TO REMAIN
RESTROOM	A102	STEEL	PAINT		X		X	
MECHANICAL ROOM	A103	STEEL	PAINT		X		X	
PRIVATE VISITATION	A104	STEEL	PAINT		X		X	
VISITATION TO VISITATION	A105	STEEL	PAINT		X		X	
JAIL TO VISITATION	A106	STEEL	PAINT		X		X	
PRIVATE VISITATION	A108	STEEL	PAINT		X		X	
PASS-THROUGH TO PODS	A109	STEEL	PAINT		X		X	
STORAGE	A111	STEEL	PAINT		X		X	
POD A ACCESS DOOR	POD-A	STEEL	PAINT		X		X	
POD A CELL DOORS (MALE)	A1 - A10	STEEL	PAINT		X		X	
PIPE ROOM BETWEEN CELLS (POD A)	PIPE1	STEEL	PAINT		X		X	
PIPE ROOM BETWEEN CELLS (POD A)	PIPE2	STEEL	PAINT		X		X	
POD B ACCESS DOOR	POD-B	STEEL	PAINT		X		X	
POD B CELL DOORS (FEMALE)	B1-B8	STEEL	PAINT		X		X	
PIPE ROOM BETWEEN CELLS (POD B)	PIPE1	STEEL	PAINT		X		X	
PIPE ROOM BETWEEN CELLS (POD B)	PIPE2	STEEL	PAINT		X		X	
JANITOR ROOM	A117	STEEL	PAINT		X		X	
STORAGE	A117A	STEEL	PAINT		X		X	
COMM. BET. MALE & FEMALE	A119	STEEL	PAINT		X		X	
JANITOR ROOM	A120	STEEL	PAINT		X		X	
STORAGE	A120A	STEEL	PAINT		X		X	
ACCESS TO RECREATION AREA	A126	STEEL	PAINT		X		X	
	A126A	STEEL	PAINT		X		X	
	A126B	STEEL	PAINT		X		X	
MECHANICAL CLOSET	A128	STEEL	PAINT		X		X	
RELEASE DOOR (EXTERIOR HALL)		STEEL	PAINT		X		X	
STORAGE (MALE SEARCH)	A129	STEEL	PAINT		X		X	
STORAGE	A130	STEEL	PAINT		X		X	
	A130A	HOLLOW METAL	PAINT		X		X	
STORAGE/OFFICE	A131	STEEL	PAINT		X		X	
HOLDING	M-1	STEEL	PAINT		X		X	
HOLDING	M-2	STEEL	PAINT		X		X	
HOLDING (SOFT WF)	M-3	STEEL	PAINT		X		X	
HOLDING	M-4	STEEL	PAINT		X		X	
MEDICAL INTER.	A135	HOLLOW METAL	PAINT		X		X	
FEMALE BOOKING	A136	STEEL	PAINT		X		X	
FEMALE BOOKING	A136A	STEEL	PAINT		X		X	
	F-1	STEEL	PAINT		X		X	
	F-2	STEEL	PAINT		X		X	
FEMALE DAYROOM	A137	STEEL	PAINT		X		X	
SEARCH ROOM	A140	STEEL	PAINT		X		X	
HOLDING SOFT WF	A141	STEEL	PAINT		X		X	
REPORT WRITE	A144	STEEL	PAINT		X		X	
RESTROOM	A145	HOLLOW METAL	PAINT		X		X	
SALLYPORT ACCESS DOORS	A146	STEEL	PAINT		X		X	PAINT BOTH SIDES: DOOR, JAMB, AND FRAMEWORK
SALLYPORT ACCESS DOORS	A146A	STEEL	PAINT		X		X	PAINT BOTH SIDES: DOOR, JAMB, AND FRAMEWORK
JANITOR ROOM	A148	STEEL	PAINT		X		X	
JANITOR ROOM (TRUSTEES)	A149	STEEL	PAINT		X		X	
TRUSTEE DORMITORY	A150	STEEL	PAINT		X		X	
LAUNDRY	A151	STEEL	PAINT		X		X	
STAFF RESTROOM	A161	HOLLOW METAL	PAINT		X		X	
CORRIDOR TO TRUSTEES AREA	A154	STEEL	PAINT		X		X	
CORRIDOR TO EXTERIOR	A154A	STEEL	PAINT		X		X	PAINT INTERIOR SIDE OF DOOR AND JAMB, EXTERIOR TO REMAIN
PANTRY	A155	STEEL	PAINT		X		X	
KITCHEN	A156	STEEL	PAINT		X		X	
MECHANICAL ROOM	A157	HOLLOW METAL	PAINT		X		X	DOUBLE DOOR. HARDWARE TO REMAIN.
STORAGE ROOM	A157A	HOLLOW METAL	PAINT		X		X	DOUBLE DOOR. HARDWARE TO REMAIN.
FEMALE JUV HOLDING CELL	A159	STEEL	PAINT		X		X	
	J-2	STEEL	PAINT		X		X	
SEARCH ROOM	A160	STEEL	PAINT		X		X	
MALE JUV HOLDING CELL	A163	STEEL	PAINT		X		X	
	J-1	STEEL	PAINT		X		X	
COURT MULTIPURPOSE	A164	STEEL	PAINT		X		X	
DETENTION AREA	A165	STEEL	PAINT		X		X	
DETENTION AREA	A165A	STEEL	PAINT		X		X	
STORAGE	A201	HOLLOW METAL	PAINT		X		X	
MECHANICAL	A208	HOLLOW METAL	PAINT		X		X	
MECHANICAL	A211	HOLLOW METAL	PAINT		X		X	
CORRIDOR	C107	STEEL	PAINT		X		X	
CORRIDOR	C107A	STEEL	PAINT		X		X	PAINT INTERIOR SIDE OF DOOR, EXTERIOR TO REMAIN

A

SEAL

REGISTERED ARCHITECT
67567
TODD M. BRAUTIGAM
DATE SIGNED 11/03/2023
ARIZONA, U.S.A.

PROJECT NAME:
LHC POLICE DEPARTMENT REHABILITATION
2360 McCULLOCH BLVD. N, LAKE HAVASU CITY, AZ 86403
APN: 108-27-041A

ARCHITECT OF RECORD

SELBERG ASSOCIATES INC.
ARCHITECTURE & PLANNING
2130 MESQUITE AVE. | SUITE 204
LAKE HAVASU CITY | ARIZONA | 86403
(928) 855-8544

PROJECT NO. 23005

ISSUED FOR: PERMIT SET

ISSUED DATE: SEPTEMBER 29, 2023

REVISION		ISSUE DATE
A	BID ADDENDUM NO. 2	11/03/2023

SHEET TITLE:
DOOR SCHEDULE

SHEET NO.
A7.01