PROJECT MANUAL

PROJECT:

AQUATIC CENTER RENOVATION 2027
Pioneer Drive
Rochester, MI 48309

OWNER:

Oakland University
201 Meadowbrook Road
Rochester, MI 48309

TMP PROJECT NO.: 26037

DATE: July 30, 2026

ISSUED FOR: CONSTRUCTION DOCUMENTS

ARCHITECT

TMP ARCHITECTURE, INC.
1191 West Square Lake Road
Bloomfield Hills, Michigan 48302-0374

PH 248-338-4561
Email info@tmp-architecture.com

POOL CONSULTANT

COUNCILMAN - HUNSAKER
12851 Manchester Road, Suite 120
Des Peres, MO. 63131

PH (314) 894 1245
Email councilmanhunsaker.com

Oakland University – Aquatics Center Renovation 2027

26037

This Document has been prepared under the supervision of the Architect and/or Professional Engineer as indicated by their individual License Seals affixed hereon.

Professional License Seals

Seal	*Seal*	*Seal*
TMP Architecture, Inc.	***Councilman - Hunsaker***	***Peter Basso Associates, Inc***
Architect	*Pool Consultant*	*Mechanical Engineer*

Seal

Peter Basso Associates, Inc
Electrical Engineer

SECTION 00 0115 - LIST OF DRAWINGS

LIST OF DRAWINGS

1.01 GENERAL

A. Drawings: Drawings consist of the Contract Drawings including drawings listed on the TITLE SHEET page of the separately bound drawing set titled Oakland University - Aquatic Center Renovations 2027, dated July 23, 2026 and any subsequent Addenda and Contract modifications which may occur.

END OF SECTION 00 0115

SECTION 00 8200 - AVAILABILITY OF ELECTRONIC FILES

AVAILABILITY OF ELECTRONIC FILES

1.01 POLICY

A. As a service to Contractor, subcontractors, vendors, material suppliers and others needing electronic copies of Drawings, the Architect will provide CAD files electronically in accordance with the following policy:

1. By acceptance it is understood and agreed that the data and medium being supplied is to be used only for the project referenced.
2. It is further understood and agreed that the undersigned will hold TMP Architecture, Inc. and its Consultants harmless and indemnify TMP Architecture, Inc. and its Consultants from all claims, liabilities, losses, and so forth, including attorney's fees arising out of the use or misuse of the transferred files.
3. It is understood and agreed that the files transmitted are prepared from CAD files current at the time of preparation. All files are AutoCAD version 2024 dwg files.
   a. Composite plans of floor plan, reflected ceiling plan, or roof plan will be provided in lieu of individual zone sheets. General Information, Life Safety Plans, and Detail sheets are not available for release.
4. This information does not waive the need to verify and review current field conditions and the status of Addenda and/or Bulletin documentation.
5. As a record of information to be transmitted, TMP Architecture, Inc. will prepare a duplicate electronic back-up for its record.
6. Compensation Fee for providing this material will be as follows:
   a. Base Fee of $250 for 1 to 3 Drawings.
   b. Base Fee of $500 for 4 to 10 Drawings.
7. A signed copy of the Release Form and Fee must be provided before files will be released.

1.02 REQUEST PROCEDURE

A. To receive Drawing CAD files the Release Form must be completed in full and submitted to the Construction Manager to be forwarded to the Project Manager at TMP Architecture, Inc.

1. A signed copy of the Release Form must be submitted.
   a. Emailed copies will be accepted.
2. Upon remittance of the signed Release Form and Fee, allow five working days for processing.
3. Transmission of Drawings will be provided electronically to the Construction Manager after the receipt of Fee.

1.03 RELEASE FORM

A. Release Form is located immediately after this Section. Refer to Section 00 8200.01 Electronic Files Release Form.

END OF SECTION 00 8200

SECTION 00 8200.02 - TMP ELECTRONIC FILE RELEASE FORM (FEE) NOT DEFAULT

.

RE: AUTHORIZATION FORM FOR CAD FILE TRANSFERS
PROJECT NAME: _____
TMP PROJECT NO. : _____ BID PACK NO._____

DEAR SIR/MADAM:

A. Per your request, TMP Architecture, Inc. will electronically transmit requested CAD files upon receipt of an original signed copy of this form which states the conditions of agreement and the receipt of the required compensation fee.
B. By acceptance it is understood and agreed that the data and medium being supplied is to be used only for the project referenced.
C. It is further understood and agreed that the undersigned will hold TMP Architecture, Inc. and its Consultants harmless and indemnify TMP Architecture, Inc. and its Consultants from all claims, liabilities, losses, and so forth, including attorney's fees arising out of the use or misuse of the transferred files.
D. It is understood and agreed that the items transmitted are prepared from CAD files current at the time of preparation. All files are AutoCAD version 2024 dwg files.
    1. Composite plans of floor plan, reflected ceiling plan, or roof plan will be provided in lieu of individual zone sheets. General Information, Life Safety Plans, and Detail sheets are not available for release.
E. This information does not waive the need to verify and review current field conditions and the status of Addenda and/or Bulletin documentation.
F. As a record of information to be transmitted, TMP Architecture, Inc. will prepare a duplicate electronic back-up for its record.
G. Compensation for providing this material will be as follows:
    1. Base Fee of $250 for 1 to 3 Drawings.
    2. Base Fee of $500 for 4 to 10 Drawings.
H. Payment must be provided along with a signed copy of this form before files will be released. Please remit to Construction Manager to be forwarded to the Project Manager at TMP Architecture, Inc. and allow five working days for processing.

FEE: $_____
REQUESTED DRAWINGS: _____
_____
_____

FIRM REQUESTING FILES:

Company: _____
Address: _____
Signed:_____Date: _____
Printed Name / Title: _____
Email: _____

TO BE COMPLETED BY TMP ARCHITECTURE, INC.

Released(signed by): _____TMP Architecture, Inc.

Printed Name/Title:_____ Date: _____

END OF SECTION 00 8200.02

SECTION 01 0005 - RELATED REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Related requirements.

1.02 DIVISION 00 AND DIVISION 01

A. Unless otherwise noted, all provisions of sections and documents in Division 00 and Division 01, including, but not limited to, General Conditions and Supplementary Conditions, relate and apply to all sections and documents within Project Manual; including, but not limited to, sections and documents in Division 00 through Division 48.

1.03 DRAWINGS

A. Unless otherwise noted, Drawings relate and apply to all specification sections and documents within Project Manual; including, but not limited to, sections and documents in Division 00 through Division 48.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION -- NOT USED

END OF SECTION 01 0005

SECTION 01 2100 - ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cash allowances.

1.02 CASH ALLOWANCES

A. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected under allowances shall be included as part of the Contract Sum and not part of the allowance.

B. Architect Responsibilities:

1. Select products in consultation with Owner and transmit decision to Contractor.
2. Prepare Change Order.

C. Contractor Responsibilities:

1. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
2. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.

D. Differences in costs will be adjusted by Change Order.

1.03 ALLOWANCES SCHEDULE

A. Allowance 1 - Contingency Allowance: Remedial Floor Coatings

1. Description: Provide a contingency allowance of $ 8,000.00 for remedial floor coating work as specified in Section 09 0561 Common Work Results for Flooring Preparation.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 2100

SECTION 01 2300 - ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Description of Alternates.

1.02 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.03 SCHEDULE OF ALTERNATES

A. Alternate 1 - Tile Finish
   1. Base Bid: To provide the specified plaster finish to pool wall and floor surfaces that are 5'-0" and less in depth..
   2. Alternate: To provide tile and grout finish in lieu of plaster finish to pool wall and floor surfaces 5'-0" or less in depth.

B. Alternate 2 - Flocculation System
   1. Base Bid: Flocculation System not provided..
   2. Alternate: to provide an electronic flocculation system as specified and as indicated on the drawings.

C. Alternate 3 - Acoustic Ceiling Baffles.
   1. Base Bid: To remove and replace damaged acoustic ceiling baffles as identified on Drawings A0.2A and A2.2A and to replace with new Acoustic Ceiling Units as specified in Section 09 8436
   2. Alternate: To remove all ceiling baffles and to replace with new baffles as specified in Section 09 8436 Acoustic Ceiling Units.

D. Alternate 4 - Paint Locker Rooms
   1. Base Bid: To retain existing finishes in Men's and Women's Varsity Locker Rooms
   2. Alternate: To prepare and paint elements in the Men's and Women's Varsity Locker Rooms as indicated on Drawing A10.1A.
      a. Refer to Room Finish Drawing for patterns, colors and extent.

E. Alternate 5 - Locker and Toilet Partition Replacement
   1. Base Bid: To retain existing lockers and benches on Restrooms and Locker Rooms and Toilet Partitions and Urinal Screens in Toilet Rooms
   2. Alternate: To remove and replace existing lockers with new Phenolic Lockers and Phenolic Toilet Partitions and Urinal Screens as scheduled and as indicated on Drawings A0.1A, A1.1A and A6.1

F. Alternate 6 - Glass Block Windows
   1. Base Bid: To retain the existing glass block windows in their curren condition.
   2. Alternate: To remove sealant from existing glass block windows as identified on drawings A4.1 and A7.2:
      a. Clean joints and replace missing or damaged backer rod.
      b. Install new sealant as indicated and as specified in Section 07 9200.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 2300

SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

A. Section 01 2500.01 - TMP Substitution Request Form.

1.03 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.

B. Substitutions: Any proposed substitution to be evaluated by the Architect and accepted as stipulated below.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
   4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   5. Waives claims for additional costs or time extension that may subsequently become apparent.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
   1. Note explicitly any non-compliant characteristics.

C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
   1. Forms included in the Project Manual are adequate for this purpose, and must be used.

D. Limit each request to a single proposed substitution item.
   1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:

B. Substitution Request Form: TMP Substitution Request Form must be completed and provided at the beginning of each substitution request.
   1. Refer to Section 01 2500.01 - TMP Substitution Request Form.
   2. Submittals without a completed TMP Substitution Request Form will not be acknowledged, reviewed, or returned. Use only this form; other forms of submission are unacceptable.

C. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Substitution Request Form: TMP Substitution Request Form must be completed and provided at the beginning of each substitution request.
   1. Refer to Section 01 2500.01 - TMP Substitution Request Form.
   2. Submittals without a completed TMP Substitution Request Form will not be acknowledged, reviewed, or returned. Use only this form; other forms of submission are unacceptable.

B. Submit request for Substitution for Cause immediately upon discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

C. Submit request for Substitution for Convenience within 14 days of discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
   1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
   2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
   3. Bear the costs engendered by proposed substitution of:
      a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
      b. Other unanticipated project considerations.

D. Substitutions will not be considered under one or more of the following circumstances:
   1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
   2. Without a separate written request.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

B. Architect will notify Contractor in writing of decision to accept or reject request.
   1. During construction, Architect's decision following review of proposed substitution will be noted on the submitted form.
   2. During bidding, Architect will approve substitution requests by issuing an Addendum. Substitutions not approved by addendum are rejected.

3.05 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

END OF SECTION 01 2500

SECTION 01 2500.01 - TMP SUBSTITUTION REQUEST FORM

SUBSTITUTION REQUEST NUMBER: _____ DATE SUBMITTED: _____
TMP PROJECT NUMBER _____PROJECT NAME: _____

SPECIFIED ITEM

SPECIFICATION TITLE:_____
SPECIFICATION SECTION_____SPECIFICATION ARTICLE/PARAGRAPH: _____
SPECIFIED PRODUCT / DESCRIPTION: _____
SPECIFIED MANUFACTURER: _____
SPECIFIED PRODUCT / MODEL: _____
REASON SPECIFIED ITEM CANNOT BE PROVIDED: _____
_____
_____

PROPOSED SUBSTITUTION

DESCRIPTION OF PROPOSED SUBSTITUTION: _____
_____
PROPOSED MANUFACTURER: _____
ADDRESS: _____
WEBSITE: _____
PRODUCT / MODEL: _____
YEARS PRODUCT/MODEL HAS BEEN MANUFACTURED: _____
DIFFERENCES BETWEEN PROPOSED SUBSTITUTION AND SPECIFIED ITEM: _____
_____
_____
_____
_____
WILL PROPOSED SUBSTITUTION AFFECT OTHER PARTS OF WORK? ☐ NO ☐ YES
IF YES, EXPLAIN HOW: _____
_____
_____
_____
HOW WILL SUBSTITUTION BENEFIT THE OWNER: ☐ COST SAVINGS ☐ TIME SAVINGS ☐ OTHER
PROVIDE SPECIFIC DETAILS: _____
_____
_____
_____

THE FOLLOWING INFORMATION IS REQUIRED; CHECK TO INDICATE INFORMATION IS ATTACHED. (REQUEST WILL BE REJECTED WITHOUT REQUIRED DATA)

32.01

A. ☐ List of references where proposed product has been installed; include address, owner, architect, and date installed.
B. ☐ Product data sheets.
C. ☐ Applicable certificates and test reports.

D. ☐ Comparative Data: Provide point-by-point, side-by-side comparison of specified product and proposed substitution addressing essential attributes specified.

INDICATE WHICH OF THE FOLLOWING VOLUNTARY INFORMATION IS ATTACHED, IF ANY:
☐ DRAWINGS.
☐ SAMPLES.
☐ OTHER ITEMS: _____

SIGNATURE

THE UNDERSIGNED CERTIFIES:

The proposed substitution meets or exceeds the quality level of the specified product, equipment, assembly, or system.
To provide the same warranty for the substitution as for the specified product.
Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
The proposed substitution will have no adverse effects on other work.
The proposed substitution will not affect project schedule.
Waives claims for additional costs or time extension that may subsequently become apparent.

CONTRACTOR / COMPANY: _____
SIGNED BY: _____PRINTED NAME: _____
TITLE: _____
ADDRESS: _____
EMAIL: _____ PHONE: _____

ARCHITECT'S RESPONSE

A. During bidding, Architect will approve substitution requests by issuing an Addendum. Substitutions not approved by addendum are rejected.
B. During construction, Architect will notify Contractor in writing (see below) of decision to accept or reject request, and incorporate the substitution into the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments as provided for in the Conditions of the Contract.

☐ SUBSTITUTION APPROVED - PROVIDE SUBMITTALS PER SECTION 01 3000 AND RESPECTIVE SECTION FOR WHICH SUBSTITUTION WAS MADE.
☐ SUBSTITUTION REJECTED - PROVIDE SPECIFIED MATERIALS.

SIGNED BY: _____PRINTED NAME: _____
ARCHITECT'S COMMENTS: _____
_____
_____

END OF SECTION 01 2500.01

SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals for review, information, and project closeout.
B. Number of copies of submittals.
C. Requests for Interpretation (RFI) procedures.
D. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 01 3000.01 - TMP Submittal and Sample Transmittal Form.

1.03 REFERENCE STANDARDS

A. AIA G716 - Request for Information; 2004.
B. CSI/CSC Form 13.2A - Request for Information; Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
   2. A resolution to an issue which has arisen due to field conditions and affects design intent.
B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
   1. Prepare a separate RFI for each specific item.
      a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
      b. Do not forward requests which solely require internal coordination between subcontractors.
   2. Prepare in a format and with content acceptable to Architect. Use one of the following:
      a. Use AIA G716 - Request for Information .
      b. Use CSI/CSC Form 13.2A - Request for Interpretation.
      c. Other format acceptable to Architect.
   3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
   4. Submit RFIs through Procore, email, or other approved method agreed to by the Architect and Owner.
      a. RFIs submitted via an internet-based submittal service are to send electronic documents to the Architect via email with a downloadable link.
C. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
   1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
   2. Improper RFIs: Requests not prepared in conformance to requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response and may include an explanatory notation.
   3. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, the Contract Documents, with no additional input required to clarify the question. They will be returned without a response and may include an explanatory notation.

a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.

D. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Discrete and consecutive RFI number, and descriptive subject/title.
3. Issue date, and requested reply date.
4. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
5. Annotations: Field dimensions and/or description of conditions which have engendered the request.
6. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
1. Indicate current status of every RFI. Update log promptly and on a regular basis.
2. Note dates of when each request is made, and when a response is received.
3. Identify and include improper or frivolous RFIs.

G. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 3:00 PM will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.02 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals in tabular format.
1. Submit at the same time as the preliminary schedule.
2. Coordinate with Contractor's construction schedule and schedule of values.
3. Format schedule to allow tracking of status of submittals throughout duration of construction.

4. Arrange information to include scheduled date for initial submittal, specification number and title, description of item of work covered, and role and name of subcontractor.
5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
    a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.03 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
1. Product data.
2. Shop drawings.
3. Samples for selection.
4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

C. Samples will be reviewed for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.

3.04 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Certificates.
3. Test reports.
4. Inspection reports.
5. Manufacturer's instructions.
6. Manufacturer's field reports.
7. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.05 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Other types as indicated.

D. Submit for Owner's benefit during and after project completion.

3.06 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy.

B. Samples: Submit the number specified in individual specification sections, but not less than 3; one (minimum) of which will be retained by Architect.
1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.07 SUBMITTAL PROCEDURES

A. Transmittal Form: TMP Submittal and Sample Transmittal Form must be completed and provided at the beginning of each submittal.
1. Refer to Section 01 3000.01 - TMP Submittal and Sample Transmittal Form.

2. Submittals without a completed TMP Submittal and Sample Transmittal Form will not be acknowledged, reviewed, or returned.

B. Submittals shall be submitted in electronic form.
   1. Exceptions: Physical samples.
      a. Physical Samples must be accompanied by an electronic copy and a hard/physical copy of the completed TMP Submittal and Sample Transmittal Form.

C. Electronic Submittals: Comply with the following:
   1. Submittal process shall be through Procore, email, or other approved method agreed to by the Architect and Owner.
      a. Submittals via an internet-based submittal service are to send electronic documents to the Architect via email with a downloadable link.
   2. File Format: Portable Document Format (PDF).
   3. File Naming: File naming shall be in the following format:
      a. Specification section number, followed by a hyphen, and a consecutive number indicating sequential submittals for that section; followed by a general description of the submittal contents.
         1) Examples:
            (a) Section 07 9200; first submittal:
               (1) 07 9200-01 Joint Sealants
            (b) Section 07 9200; second submittal:
               (1) 07 9200-02 Joint Sealant Color
      b. Resubmittals. For revised resubmittals use original number and a sequential combination numerical and alphabetical suffix; hyphen followed by "R" and a two-digit consecutive number indicating sequential resubmittals for that particular submittal.
         1) Examples:
            (a) Section 07 9200; resubmittal of first submittal of section:
               (1) 07 9200-01-R01 Joint Sealants.
            (b) Section 07 9200; second resubmittal of first submittal of section:
               (1) 07 9200-01-R02 Joint Sealants
            (c) Section 07 9200; first resubmittal of second submittal of section:
               (1) 07 9200-02-R01 Joint Sealant Color
   4. Each Submittal shall be one file, complete with all attachments.
      a. Multi-file submittal will not be acknowledged, reviewed, or returned.

D. General Requirements:
   1. Use a single transmittal for related items.
      a. Each transmittal shall be for one specification section only; do not submit items for multiple sections under the same transmittal.
         1) Multi-section submittals will be acknowledged and returned; stamped "X - Not Approved - Resubmit".
   2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
   3. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
      a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
   4. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
   5. Schedule submittals to expedite the Project, and coordinate submission of related items.
      a. For each submittal for review, allow 14 calendar days excluding delivery time to and from the Contractor.
      b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 calendardays.

6. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
7. When revised for resubmission, identify all changes made since previous submission.
8. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
9. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
10. Submittals not requested will be recognized and returned; stamped "NA - No Action Taken - Not Reviewed"

E. Product Data Procedures:
1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Submit concurrently with related shop drawing submittal.
4. Do not submit (Material) Safety Data Sheets for materials or products unless specifically called for in individual sections.

F. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
2. Do not reproduce Contract Documents to create shop drawings.
3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
4. Non-complying submittals will be acknowledged and returned; stamped "X - Not Approved - Resubmit".

G. Samples Procedures:
1. Transmit related items together as single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
3. Submit actual physical samples.
4. Electronic submittals will not be accepted unless prior approval is received from the Architect. Electronic samples without prior approval will be acknowledged and returned; stamped "X - Not Approved - Resubmit."

3.08 SUBMITTAL REVIEW

A. General: Submittals that do not conform to the requirements of this section will not be acknowledged, reviewed, or returned.

B. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

C. Submittals for Information: Architect will acknowledge and may review. See below for actions to be taken.

D. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Where more than one action has been indicated, each shall apply to that portion of the submittal for which the action is indicated.

E. Architect's review shall not indicate approval of dimensions, quantities or fabrication processes unless specific notations are made by the Architect regarding same.

F. Architect's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
a. "Reviewed - No Exceptions Taken", "Approved", or language with same legal meaning.
b. "Reviewed with Corrections Noted", "Approved as Noted, Resubmission not required", or language with same legal meaning.
1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.

2. Not Authorizing fabrication, delivery, and installation:
   a. "Revise and Resubmit", "Not Approved - Resubmit", or language with the same legal meaning.
      1) Resubmit revised item, with review notations acknowledged and incorporated.
3. Not Authorizing manufacturer:
   a. Rejected - Resubmit, or language with the same legal meaning.

G. Architect's and consultants' actions on items submitted for information:
1. Items for which no action was taken:
   a. "No Action Taken - Not Reviewed" or "Received" - to notify the Contractor that the submittal has been received for record only.

END OF SECTION 01 3000

SUBMITTAL AND SAMPLE TRANSMITTAL FORM

01 3000.01

CONST. MANAGER / CONTRACTOR	PROJECT	TMP PROJECT NO.	DATE SUBMITTED	SUBMITTAL NO.
Name and Address:	Title:	26037		
	Aquatic Center Renovation 2027 Oakland University	* ACTION CODES		Initial Submittal ☐ Resubmittal ☐
Email:	Location:	R Reviewed – No Exceptions Taken RN Reviewed with Corrections Noted RR Revise and Resubmit X Not Approved – Resubmit NA No Action Taken – Not Reviewed		REVIEWED BY
Phone:	Pioneer Drive Rochester MI 48309			TMP ☐ Consultant ☐ Reviewer:

SPECIFICATION SECTION NO.	SUBCONTRACTOR / MANUFACTURER	ITEM DESCRIPTION	NO. OF SAMPLES	NO. OF SAMPLES RETURNED	ACTION CODE *	DATE REVIEWED	DATE RETURNED
Transmittal shall be for one specification section only; do not submit items from multiple sections under the same transmittal. Multi-section submittals will be returned; stamped "X - Not Approved - Resubmit"							

Submittal Stamps may be placed on subsequent blank page.

CONTRACTOR COMMENTS	ARCHITECT COMMENTS	The undersigned certifies that the above submitted items have been reviewed in detail and are correct and in strict conformance with the Contract Documents except as otherwise noted. NOTE: Approval of items submitted does not relieve Contractor from complying with all requirements of the Contract Documents.
		CONTRACTOR NAME
		SIGNATURE

This page intentionally left blank for Submittal Stamps

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.
B. Quality assurance.
C. References and standards.
D. Testing and inspection agencies and services.
E. Contractor's design-related professional design services.
F. Control of installation.
G. Mock-ups.
H. Tolerances.
I. Manufacturers' field services.
J. Defect Assessment.

1.02 REFERENCE STANDARDS

A. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025b.
B. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2026.
C. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.

1.03 DEFINITIONS

A. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
    1. Design Services Types Required:
        a. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.
B. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.04 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
B. Base design on performance and/or design criteria indicated in individual specification sections.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
    1. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
    2. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
C. Test Reports: After each test/inspection, promptly submit 1 copies of report to Architect and to Contractor.
    1. Include:

a. Date issued.
b. Project title and number.
c. Name of inspector.
d. Date and time of sampling or inspection.
e. Identification of product and specifications section.
f. Location in the Project.
g. Type of test/inspection.
h. Date of test/inspection.
i. Results of test/inspection.
j. Compliance with Contract Documents.
k. When requested by Architect, provide interpretation of results.

2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications:
1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time specialist and responsible officer.

B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.07 REFERENCES AND STANDARDS

A. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

B. Obtain copies of standards where required by product specification sections.

C. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

1.08 TESTING AND INSPECTION AGENCIES AND SERVICES

A. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. Contractor Employed Agency:

1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, and ASTM E699.
2. Inspection agency: Comply with requirements of ASTM E329.
3. Laboratory Staff: Maintain a full time specialist on staff to review services.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
B. Comply with manufacturers' instructions, including each step in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
E. Have work performed by persons qualified to produce required and specified quality.
F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
C. Integrated Exterior Mock-ups: Construct integrated exterior mock-up as indicated on drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.
D. Notify Architect 5 working days in advance of dates and times when mock-ups will be constructed.
E. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
F. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
G. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
H. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
   1. Make corrections as necessary until Architect's approval is issued.
I. Architect will use accepted mock-ups as a comparison standard for the remaining Work.
J. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. See individual specification sections for testing and inspection required.
B. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.
C. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.
D. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 48 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION 01 4000

SECTION 01 4100 - REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY OF REFERENCE STANDARDS

A. Regulatory requirements applicable to this project are the following:
   1. ASHRAE Std 90.1 I-P-2019 - Energy Standard for Buildings Except Low-Rise Residential Buildings; 2019, with Errata and Addenda (2021).
   2. Barrier Free Code: Comply with the following:
      a. Michigan Building Code; 2021.
      b. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
   3. School Fire Safety Rules: Michigan School Fire Safety Rules; 2016.
      a. Includes NFPA 101-2012 - Life Safety Code; 2012, plus amendments.
   4. Building Code: Michigan Building Code; 2021.
   5. Plumbing Code: Michigan Plumbing Code; 2021.
   6. Mechanical Code: Michigan Mechanical Code; 2021.
   7. Electrical Code: NFPA 70 - National Electric Code; 2023.
      a. Includes 2023 Michigan Construction Code - Part 8 Electrical Code Rules.
   8. Elevator Code: Comply with the following:
      a. ASME A17.1 - Safety Code for Elevators and Escalators; 2016.
      b. ASME A18.1- Safety Standard for Platform Lifts and Stairway Chairlifts; 2017.
      c. 2023 Michigan Elevator Safety Board General Rules.
   9. Boiler Code: Michigan Boiler Code.
      a. Includes the following:
         1) ASME Boiler and Pressure Vessel Codes; 2019.
         2) National Board Inspection Code; 2019.
         3) PA 407 Skilled Trades Regulation Act; 2016.
   10. Energy Code: Michigan Commercial Energy Code; 2021.
      a. Includes ASHRAE Std 90.1 I-P-2019 - Energy Standard for Buildings Except Low-Rise Residential Buildings; 2019.
   11. Existing Building Code: Michigan Rehabilitation Code; 2021.

B. Where specification sections reference more current standards or codes, comply with the more restrictive requirements unless notified in writing by Architect.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 4100

SECTION 01 4216 - DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

A. This section supplements the definitions contained in the General Conditions.

B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Furnish: To supply, deliver, unload, and inspect for damage.

B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

E. Provide: To furnish and install.

F. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 4216

SECTION 01 4219 - REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements relating to referenced standards.

1.02 QUALITY ASSURANCE

A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with the reference standard of date of issue , except where a specific date is established by applicable code.

C. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.

D. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION -- NOT USED

END OF SECTION 01 4219

SECTION 01 4533 - CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Code-required special inspections.
B. Submittals.

1.02 ABBREVIATIONS AND ACRONYMS

A. AHJ: Authority having jurisdiction.
B. NIST: National Institute of Standards and Technology.

1.03 DEFINITIONS

A. Code or Building Code: Michigan Building Code; 2021, specifically Chapter 17 - Special Inspections and Tests.
B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.
C. Special Inspection:
   1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved Contract Documents and the referenced standards.
   2. Special inspections are separate from and independent of tests and inspections conducted by Owner or Contractor for the purposes of quality assurance and contract administration.

1.04 REFERENCE STANDARDS

A. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025b.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
   1. Submit agency name, address, and telephone number, names of full time specialist and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
   3. Submit certification that Special Inspection Agency is acceptable to AHJ.
C. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one to the AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of Special Inspector.
      d. Date and time of special inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of special inspection.
      h. Date of special inspection.
      i. Results of special inspection.
      j. Compliance with Contract Documents.

2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.

D. Fabricator Special Inspection Reports: After each special inspection of fabricated items at the Fabricator's facility, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one to AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of Special Inspector.
      d. Date and time of special inspection.
      e. Identification of fabricated item and specification section.
      f. Location in the Project.
      g. Results of special inspection.
      h. Verification of fabrication and quality control procedures.
      i. Compliance with Contract Documents.
      j. Compliance with referenced standard(s).

E. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one to AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test or inspection.
      h. Date of test or inspection.
      i. Results of test or inspection.
      j. Compliance with Contract Documents.

1.06 SPECIAL INSPECTION AGENCY

A. Owner will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.

B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.07 QUALITY ASSURANCE

A. Special Inspection Agency Qualifications:
   1. Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
   1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
   2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

3.02 SPECIAL INSPECTIONS

A. Special inspections and testing shall be for materials, installation, fabrication, erection or placement of components and connections as indicated on Drawings, but not less than that required by the building code.

END OF SECTION 01 4533

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Re-use of existing products.
B. Transportation, handling, storage and protection.
C. Product option requirements.
D. Substitution limitations.
E. Procedures for Owner-supplied products.
F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
    1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
D. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is required.
    1. Refer to Drawings and Section 02 4100 - Demolition.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
D. Available Products: Products specified by naming one or more Manufacturers as an Available Product indicates that these Manufacturers' products may be provided but other comparable products and Manufacturers not named may also be provided without submitting a request for substitution.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver and place in location as directed; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 2500 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

A. 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.

B. Contractor's Responsibilities:

1. Review Owner reviewed shop drawings, product data, and samples.
2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

F. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

G. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Provide off-site storage and protection when site does not permit on-site storage or protection.

G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

H. Comply with manufacturer's warranty conditions, if any.

I. Do not store products directly on the ground.
J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
K. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
L. Prevent contact with material that may cause corrosion, discoloration, or staining.
M. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
N. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 6000

SECTION 01 7000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.
B. Requirements for alterations work, including selective demolition.
C. Pre-installation meetings.
D. Cutting and patching.
E. Surveying for laying out the work.
F. Cleaning and protection.
G. Starting of systems and equipment.
H. Demonstration and instruction of Owner personnel.
I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
J. General requirements for maintenance service.

1.02 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2027.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Effect on work of Owner or separate Contractor.
C. Project Record Documents: Accurately record actual locations of capped and active utilities.
D. Warranties: For each affected material under warranty, submit written verification, signed by manufacturer of existing materials, stating that the Owner's full warranty will remain in effect after cutting and patching operations have been completed

1.04 QUALIFICATIONS

A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

1.05 PROJECT CONDITIONS

A. Use of explosives is not permitted.
B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
D. Perform dewatering activities, as required, for the duration of the project.

E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
G. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
   2. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.
I. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
B. Notify affected utility companies and comply with their requirements.
C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
F. Coordinate completion and clean-up of work of separate sections.
G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.07 WARRANTIES

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
C. Examine and verify specific conditions described in individual specification sections.
D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.
B. Seal cracks or openings of substrate prior to applying next material or substance.
C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
B. Require attendance of parties directly affecting, or affected by, work of the specific section.
C. Notify Architect 5 calendar days in advance of meeting date.
D. Prepare agenda and preside at meeting:
    1. Review conditions of examination, preparation and installation procedures.
    2. Review coordination with related work.
E. Record minutes and distribute copies within two days after meeting to participants, with 1 copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.
B. Promptly notify Architect of any discrepancies discovered.
C. Contractor shall locate and protect survey control and reference points.
D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
E. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
G. Utilize recognized engineering survey practices.
H. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
2. Grid or axis for structures.
3. Building foundation, column locations, ground floor elevations.
4. Controlling lines and levels required for mechanical and electrical trades.

I. Periodically verify layouts by same means.

J. Maintain a complete and accurate log of control and survey work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.

B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation only.
1. Verify that construction and utility arrangements are as indicated.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
1. Provide, erect, and maintain temporary dustproof partitions.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

D. Remove existing work as indicated and as required to accomplish new work.
1. Remove items indicated on drawings.
2. Relocate items indicated on drawings.
3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.

a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
b. Provide temporary connections as required to maintain existing systems in service.

4. Verify that abandoned services serve only abandoned facilities.
5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

J. Clean existing systems and equipment.

K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

L. Do not begin new construction in alterations areas before demolition is complete.

M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

J. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
      a. This includes painted surfaces.
      b. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

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. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architectand Owner 7 calendar days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 DEMONSTRATION AND INSTRUCTION

A. See Section 01 7900 - Demonstration and Training.
B. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
E. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
F. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
G. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.12 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.13 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.
B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
E. Clean filters of operating equipment.
F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
G. Clean site; sweep paved areas, rake clean landscaped surfaces.
H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.14 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
B. Accompany Contractor on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.15 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.
B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION 01 7000

SECTION 01 7329 - CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cutting and patching.

1.02 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:

1. Structural integrity of any element of Project.
2. Integrity of weather exposed or moisture resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate Contractor.
6. Include in request:
   a. Location and description of affected work.
   b. Necessity for cutting or alteration.
   c. Description of proposed work and products to be used.
   d. Effect on work of Owner or separate Contractor.

C. Warranties: For each affected material under warranty, submit written verification, signed by manufacturer of existing materials, stating that the Owner's full warranty will remain in effect after cutting and patching operations have been completed.

1.04 WARRANTIES

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

1. Materials that are still under warranty include, but are not limited to, the following:
   a. _____.
   b. _____.
   c. _____.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

B. Prior to Patching: Before patching, verify compatibility and suitability of substrates, including compatibility with existing finishes or primers. Beginning of patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.
B. Seal cracks or openings of substrate prior to applying next material or substance.
C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.
D. Protect existing work to remain.
    1. Prevent movement of structure; provide shoring and bracing if necessary.
    2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
E. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.03 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.
B. Perform whatever cutting and patching is necessary to:
    1. Complete the work.
    2. Fit products together to integrate with other work.
    3. Provide openings for penetration of mechanical, electrical, and other services.
    4. Match work that has been cut to adjacent work.
    5. Repair areas adjacent to cuts to required condition.
    6. Repair new work damaged by subsequent work.
    7. Remove samples of installed work for testing when requested.
    8. Remove and replace defective and non-conforming work.
C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
D. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
E. Cutting:
    1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces.
    2. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
    3. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
F. Restore work with new products in accordance with requirements of Contract Documents.
G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400 - Firestopping, to full thickness of the penetrated element.
I. Patching:
    1. Repair adjacent construction and finishes damaged during removal work and cutting work.
    2. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
        a. This includes painted surfaces.
        b. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
    3. Match color, texture, and appearance.

4. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

END OF SECTION 01 7329

SECTION 01 7800 - CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.
B. Operation and maintenance data.
C. Warranties and bonds.

1.02 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.
C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. General:
   1. Project Record Documents include:
      a. Complete set of Record Drawings.
      b. Complete set of Record Submittals.
      c. Complete set of Specifications.
   2. Project Record Documents shall be submitted in electronic form.
      a. File Format: Portable Document Format (PDF).
      b. Files shall be named and organized in a searchable, easy to understand, system.
   3. Ensure entries are complete and accurate, enabling future reference by Owner.
   4. Record information concurrent with construction progress.
B. Record Drawings: Record Drawings shall include the following:
   1. Complete set of Drawings.
      a. Indicate and record actual construction including, but not limited to, the following:
         1) Show all systems and assemblies as they exist at completion of the Work.
         2) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
         3) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
         4) Field changes of dimension and detail.
         5) Details not on original Contract drawings.
   2. Addenda.
   3. Change Orders and other modifications to the Contract.

C. Record Submittals: Record Submittals shall include the following:
   1. Complete set of Submittals, including resubmittals.
   2. Shop Drawings shall indicate all field changes and other variations from the Submittal as originally reviewed by Architect.
D. Specifications: Specifications shall include the following:
   1. Complete Project Manual including all specifications, front end material, reports, and information available to bidders, as originally bid.
   2. Addenda.
   3. Change Orders and other modifications to the Contract.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
C. Additional information as specified in individual product specification sections.
D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.
B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
D. Include color coded wiring diagrams as installed.
E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
G. Provide servicing and lubrication schedule, and list of lubricants required.
H. Include manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by controls manufacturer.
J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
K. Provide control diagrams by controls manufacturer as installed.
L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
M. Include test and balancing reports.
N. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. General:
   1. Operational and Maintenance Manuals include:
      a. Operational and maintenance data.
      b. Operational and maintenance data for materials and finishes.
      c. Operational and maintenance data for equipment and systems.
   2. Operational and Maintenance Manuals shall be submitted both in electronic form and as hard copy/durable manuals.
      a. Subject to Owner approval, hard copy/durable manuals may be omitted.
      b. Electronic File Format: Portable Document Format (PDF).
         1) Files shall be named and organized in a searchable, easy to understand, system similar to the descriptions for the hard copy/durable manuals
B. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
C. Where systems involve more than one specification section, provide separate tabbed divider for each system.
D. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 3 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
E. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
F. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
G. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
H. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
I. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
J. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
K. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Operation and maintenance data.
      c. Field quality control data.
      d. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION 01 7800

SECTION 01 7900 - DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. HVAC systems and equipment.
   3. Plumbing equipment.
   4. Electrical systems and equipment.
   5. Items specified in individual product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
   1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
   2. Finishes, including flooring, wall finishes, ceiling finishes.
   3. Fixtures and fittings.
   4. Items specified in individual product Sections.

1.02 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures; except:

B. Draft Training Plans: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
   1. Submit not less than four weeks prior to start of training.
   2. Revise and resubmit until acceptable.
   3. Provide an overall schedule showing all training sessions.
   4. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of products and/or systems to be covered.
      c. Name of firm and person conducting training; include qualifications.
      d. Intended audience, such as job description.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
      g. Media to be used, such a slides, hand-outs, etc.
      h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

1.03 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

B. Coordination: Coordinate demonstration and training of this section with project commissioning requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.

1. Perform demonstrations not less than two weeks prior to Substantial Completion.
2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.

1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.

C. Provide training in minimum two hour segments.

D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:

1. The location of the O&M manuals and procedures for use and preservation; backup copies.
2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
3. Typical uses of the O&M manuals.

F. Product- and System-Specific Training:

1. Review the applicable O&M manuals.
2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
4. Provide hands-on training on all operational modes possible and preventive maintenance.
5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
6. Discuss common troubleshooting problems and solutions.
7. Discuss any peculiarities of equipment installation or operation.
8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
9. Review recommended tools and spare parts inventory suggestions of manufacturers.
10. Review spare parts and tools required to be furnished by Contractor.
11. Review spare parts suppliers and sources and procurement procedures.

G. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION 01 7900

SECTION 02 4100 - DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.
B. Salvaged items.
C. Removed and reinstalled items.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Salvaging existing brick.

1.03 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2027.
B. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.05 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of work required.
   1. Minimum of 5 years of documented experience.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMOLITION

A. Remove portions of existing building as indicated on Drawings including, but not limited to, the following:
   1. Remove floor finishes, ceiling finishes, and soffits as indicated on drawings.
   2. Remove other items indicated, for salvage and relocation.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with requirements in Section 01 7000.
B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Prior to start of demolition operations, perform an engineering survey of building condition to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures.
   4. Use of explosives is not permitted.
   5. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   6. Provide, erect, and maintain temporary barriers and security devices.
   7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   8. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
   9. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
   10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.
C. Do not begin removal until receipt of notification to proceed from Owner.
D. Do not begin removal until built elements to be salvaged or relocated have been removed.
E. Protect existing structures and other elements to remain in place and not removed.

1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

F. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.03 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
   1. Where concrete cannot be cut full depth, cut concrete to a depth of at least 3/4 inch. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
   1. Refer to Section 04 2000 - Unit Masonry for salvaging brick.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI (RWP). Do not use methods requiring solvent-based adhesive strippers.

E. Carpet: Remove carpet and adhesive according to industry standard and below. Do not use methods requiring solvent-based adhesive strippers.
   1. Remove carpet in managable sections and dispose.
   2. Using a floor scraper, scrape residual of carpet and adhesive from concrete.
   3. Sand the floor by mechanical means starting with a heavy grit to remove the bulk of the left adhesive and then a finer grit (approx 300) for the finish sand to allow new finish to be applied.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from areas that remain occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction as specified and/or indicated on Drawings .

C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

D. Remove existing work as indicated and required to accomplish new work.
   1. Remove items indicated on Drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
   1. Prevent movement of structure. Provide shoring and bracing as required.

2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch to match new work.

3.05 SALVAGED ITEMS

A. Clean salvaged items.
B. Pack or crate items after cleaning. Identify contents of containers.
C. Store items in a secure area until delivery to Owner.
D. Transport items to Owner's storage area on-site.
E. Protect items from damage during transport and storage.

3.06 REMOVED AND REINSTALLED ITEMS

A. Clean and repair items to functional condition adequate for intended reuse.
B. Pack or crate items after cleaning and repairing. Identify contents of containers.
C. Protect items from damage during transport and storage.
D. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

3.07 EXISTING ITEMS TO REMAIN

A. Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete

3.08 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.
B. Leave site in clean condition, ready for subsequent work.
C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 4100

SECTION 04 0100 - MAINTENANCE OF MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water, Chemical, and Detergent cleaning of masonry surfaces.
B. Replacement of masonry units.
C. Repointing mortar joints.
D. Repair of damaged masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Brick masonry units.
B. Section 04 2000 - Unit Masonry: Mortar and grout.
C. Section 04 2000 - Unit Masonry: Salvaging existing brick.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
   1. Require attendance of parties directly affecting work of this section.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on cleaning materials, mortar materials, masonry materials, and accessory materials .
C. Quality Control Program: Provide for brick replacement and repointing work.
D. Restorer qualifications.

1.05 QUALITY ASSURANCE

A. Restorer: Company specializing in masonry restoration with minimum 5 years of documented experience.

1.06 MOCK-UP

A. Restore and repoint an existing masonry wall area sized 8 feet long by 8 feet high; include in mock-up area instances of mortar, accessories, and brick replacement.
B. Clean a 10 ft by 10 ft panel of wall to determine extent of cleaning.
   1. Mockups to include all cleaning methods proposed for use, including detergent cleaners, chemical cleaners, paint strippers, and biological cleaners.
C. Locate where directed.
D. Acceptable panel and procedures employed will become the standard for work of this section.
E. Mock-up may remain as part of the Work.
F. Do not begin Work until mock-ups are approved by Architect.

1.07 FIELD CONDITIONS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 CLEANING MATERIALS

A. Water: Potable.
   1. Hot Water: Water heated to a temperature of 140 to 160 deg F.
B. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
C. Nonacidic Cleaner: Manufacturer's standard mildly alkaline gel cleaner formulated for removing mold, mildew, and other organic soiling from natural stone and cast stone as well as brick.

1. Basis-of-Design: Sure Klean 942 Limestone & Marble Cleaner; Prosoco, Inc.

D. Mild-acid Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.
   1. Basis-of-Design: Enviro Klean EK Restoration Cleaner; Prosoco, Inc.

E. Paint Stripper: Manufacturer's standard neutral-PH gel stripper compound formulated for removing alkyd, acrylic, and graffiti paints from masonry.
   1. Basis-of-Design: Enviro Klean SafStrip 8; Prosoco, Inc.

F. Biological Cleaner: Manufacturer's standard mildly acidic liquid cleaner for removing mold, mildew, and other biological soiling .
   1. Basis-of-Design: Enviro Klean Revive Prosoco, Inc.

2.03 MORTAR MATERIALS

A. Repointing Mortar: Type N.
   1. Conform to requirements of Section 04 2000 - Unit Masonry.
   2. Match existing mortar in color and texture.

2.04 MASONRY MATERIALS

A. Brick: Refer to Section 04 2000 - Unit Masonry.
   1. Reuse salvaged existing brick for restoration and repair work to maximum extent possible in all visible locations. Use new brick only when quantities of existing brick are insufficient.

2.05 ACCESSORY MATERIALS

A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
   1. Basis-of-Design: Sure Klean Strippable Masking; Prosoco, Inc.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces to be cleaned and restored are ready for work of this section.

3.02 PREPARATION AND PROTECTION

A. Protect surrounding elements from damage due to restoration procedures.

B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Separate areas to be protected from restoration areas using means adequate to prevent damage.

D. Cover existing landscaping with tarpaulins or similar covers.

E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.
   1. When cleaning is completed, remove masking materials, leaving no residues that could trap dirt.

F. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

G. Do not allow cleaning runoff to drain into sanitary or storm sewers.

H. Neutralize alkaline and acid wastes before disposal.

I. Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.

3.03 BRICK REMOVAL AND REPLACEMENT

A. Damaged Brick: Remove bricks that are damaged, cracked, spalled, or deteriorated. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

1. When removing single bricks, remove material from center of brick and work toward outside edges.
2. Cut out mortar by hand with chisel and mallet. Do not use power-operated grinders without Architect's written approval.
   a. Submit quality-control program and demonstrated ability of operators to use power tools without damaging masonry. Quality-control program shall include provisions for supervising performance and preventing damage due to worker fatigue.
   b. If Architect approves the use of small blade grinders, cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Do not use grinders on head joints. Remove remaining mortar by hand with chisel and mallet.
      1) Strictly adhere to written quality-control program.

B. Loose Brick: Remove bricks that are loose and no longer bonded with mortar in an undamaged condition.
   1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
   2. Store brick for reinstallation.

C. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

D. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose masonry units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

F. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

G. Lay replacement brick and reinstalled loose brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks Use wetting methods that ensure that units are nearly saturated but surface is dry when laid. Maintain joint width for replacement units to match existing joints.
   1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
   2. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area.

3.04 REPOINTING MASONRY

A. Rake out and repoint mortar joints to the following extent:
   1. All joints in areas indicated.
   2. Joints where mortar is missing or where they contain holes.
   3. Cracked joints where cracks can be penetrated at least 1/4 inch by a knife blade 0.027 inch thick.
   4. Cracked joints where cracks are 1/8 inch or more in width and of any depth.
   5. Joints that sound hollow when tapped by metal object.
   6. Joints that are worn back 1/4 inch or more from surface.
   7. Joints that are deteriorated to point that mortar can be easily removed by hand.
   8. Joints, other than those indicated as sealant-filled joints, that have been filled with substances other than mortar.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows:
   1. Remove mortar from joints to depth of 2-1/2 times joint width, but not less than 1/2 inch or not less than that required to expose sound, unweathered mortar.

2. Remove mortar from brick and stone surfaces within raked-out joints to provide reveals with square backs and to expose brick and stone for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of brick or stone units or widen joints. Replace or patch damaged masonry units as directed by Architect.
4. Cut out mortar by hand with chisel and mallet. Do not use power-operated small blade grinders without Architect's written approval.
   a. Submit quality-control program and demonstrated ability of operators to use power tools without damaging masonry. Quality-control program shall include provisions for supervising performance and preventing damage due to worker fatigue.
   b. If Architect approves the use of small blade grinders cut out center of mortar bed joints using small blade angle grinders with diamond-impregnated metal blades. Do not use small blade grinders on head joints. Remove remaining mortar by hand with chisel and mallet.
      1) Strictly adhere to written quality-control program.
   c. If damage occurs using angle grinders then cut out mortar by hand with chisel and mallet.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Point brick joints as follows:
1. Rinse masonry-joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen masonry-joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing bricks or stone units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar over edges onto exposed brick or stone surfaces or to featheredge mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints. Remove excess mortar from edge of joint by brushing.

F. Refer to Section 07 9200 - Joint Sealants for sealing stone joints.

3.05 MORTAR CURING

A. Cure mortar by maintaining in thoroughly damp condition for at least 72 hours including weekends and holidays.

B. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.

C. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.

3.06 MASONRY REPAIRS AND REPOINTING CLEANING - GENERAL

A. Immediately remove stains, efflorescence, or other excess resulting from brick replacement and repointing of masonry.

B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.
1. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

C. Clean surrounding surfaces.

3.07 CLEANING MASONRY - GENERAL

A. General: Begin with the mildest form of cleaning and proceed to harsher cleaning methods only after a milder method has not yielded the desired results. Subject to the substrate being cleaned, the cleaning methods from mildest to harshest are as follows:
   1. Detergent solution cleaning.
   2. Nonacidic chemical cleaning.
   3. Mild-acid chemical cleaning.
   4. Where above cleaning methods has proven not to completely remove paint or biological soiling in the mockups, use special paint strippers and biological cleaners to remove paint and biological soiling prior to cleaning methods indicated above.

B. Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 10 feet away, subject to Architect's approval.

C. Where brick replacement and repointing work precedes cleaning of existing brick and stone, allow mortar to fully set and cure.
   1. Allow mortar to harden at least 30 days before beginning cleaning work.

D. Preliminary Cleaning: Prior to applying cleaning materials complete the following:
   1. Brush loose soil and plant debris from open joints.
   2. Carefully remove plants, creepers, and vegetation.
   3. Remove extraneous substances including paint, calking, asphalt, and tar that are resistant to planned cleaning methods using scrappers.
      a. Do not scratch or chip masonry surfaces.

E. Proceed with cleaning in an orderly manner; work from bottom to top, and from one end of each elevation to the other.
   1. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.
   2. Keep wall wet below area being cleaned to prevent streaking from runoff.

F. Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; use brush or spray application.
   1. Periodically during rinsing, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
      a. Repeat rinsing until tested pH of water runoff is between 6.7 and 7.5.

G. Pressure Spraying: Begin using a low pressure setting of between 50 and 100 psi and proceed to higher pressures only after a lower setting has not yielded the desired results. Do not exceed 500 psi, and stop immediately if damage occurs to masonry or masonry joints.
   1. Ensure that pressures used in the cleaning process do not cause additional damage to masonry surfaces and masonry joints.
   2. Mockups shall be used to determine proper pressures. Do not exceed pressures used in approved mockups.
   3. If damage continues to occur after mockup testing, stop work immediately and contact Architect.

3.08 DETERGENT CLEANING

A. Wet surface with cold water applied by low-pressure spray.

B. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.

C. Rinse with cold water applied by low-pressure spray to remove detergent solution and soil.

D. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

3.09 NONACIDIC CHEMICAL CLEANING.

A. Wet surface with cold water applied by low-pressure spray.

B. Apply gel cleaner by brush, working into joints and crevices. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.
C. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
D. Remove bulk of gel cleaner.
E. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
F. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

3.10 MILD-ACID CHEMICAL CLEANING

A. Wet surface with cold water applied by low-pressure spray.
B. Apply cleaner to surface by brush or low-pressure spray.
C. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
D. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
E. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

3.11 PAINT STRIPPING

A. Wet surface with cold water applied by low-pressure spray.
B. Apply gel stripper by brush. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.
C. Let stripper remain on surface for period recommended in writing by stripper manufacturer. Periodically agitate with brush.
D. Rinse with hot water applied by low-pressure spray to remove chemicals and soil.
E. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

3.12 BIOLOGICAL CLEANING

A. Wet surface with cold water applied by low-pressure spray.
B. Apply cleaner to surface by brush or low-pressure spray.
C. Let cleaner remain on surface for period recommended in writing by cleaner manufacturer. Periodically agitate with brush to loosen biological soiling.
D. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
E. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

END OF SECTION 04 0100

SECTION 05 5000 - METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items, including:
   1. Loose steel lintels.
   2. Bent metal restraints at top of interior masonry walls.
   3. Steel framing supports for the following:
      a. Roof openings.
      b. Folding panel partitions (operable partitions).
      c. Ceiling-hung toilet compartments.
      d. Mechanical and electrical equipment.
      e. Applications where framing and supports are not specified in other Sections.
      f. Other items as indicated on Drawings.
   4. Metal ladders.
   5. Elevator pit ladder.
   6. Elevator hoist beam.
   7. Bollards.
   8. Other items as indicated on Drawings.
B. Prefabricated metal items, including:
   1. Alternating tread stairs.
   2. Stair nosings.
C. Slotted channel framing.

1.02 REFERENCE STANDARDS

A. ANSI A14.3 - American National Standard for Ladders - Fixed - Safety Requirements; 2008 (Reaffirmed 2018).
B. ANSI A14.3 - American National Standard for Ladders - Fixed - Safety Requirements; 2008 (Reaffirmed 2018).
C. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2022.
D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.
F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
G. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
H. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.
I. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
K. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.
L. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
N. NAAMM MBG 531 - Metal Bar Grating Manual; 2017.
O. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

P. SSPC-SP 2 - Hand Tool Cleaning; 2024.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.

C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

D. Designer's Qualification Statement.

E. Fabricator's Qulaification Statement.

1.04 QUALITY ASSURANCE

A. Design metal fabrications under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Fabricator: Company specializing in performing the work of this section with minimum 5years of documented experience.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A500/A500M, Grade B, cold-formed or ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black and hot-dip galvanized finish, as indicated.

E. Slotted Channel Framing:
   1. Slotted Channel Framing: ASTM A653/A653M Grade 33.
      a. Channel Size: 1-5/8 by 1-5/8 inches.
      b. Thickness: 0.060 inch (16 gage), minimum.
      c. Finish: Galvanized, G90 coating.
   2. Fittings and Fasteners: Manufacturer's standard fittings and fasteners; finished to match slotted channel framing.

F. Bolts, Nuts, and Washers: ASTM A307, Grade A, galvanized to ASTM A153/A153M where connecting galvanized components.

G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.

J. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.02 FABRICATION - GENERAL

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 LOOSE STEEL LINTELS

A. General:
1. Fabricate loose steel lintels from steel angles, plates, and other shapes as indicated.
a. Weld adjoining members together to form a single unit.
2. Size loose steel lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches, unless otherwise indicated.
3. Galvanize loose steel lintels located in exterior walls.
4. Prime loose steel lintels located in interior walls.
5. Provide lintels at openings for all equipment and ductwork.

B. Fabricate loose steel lintels in accordance with the following schedule, unless otherwise indicated:

CLEAR SPAN (Feet)	*WALL WIDTH (Inches)*	*ANGLE SIZE (LLV)*	*BEAM SIZE*	*VERTICAL PLATES (Inches)*	*HORIZONTAL PLATE SIZE (Inches)*
0 to 4	0 to 4	4x4x3/8	-	-	--
	4+ to 8	-	-	4x1/4	Wall Width minus 1 x 3/8
	8+ to 12	-	-	(2) 4x1/4, 4 oc	Wall Width minus 1 x 3/8
	12+ to 16	-	-	(3) 4x1/4, 4 oc	Wall Width minus 1 x 3/8
4+ to 6	0 to 4	4x4x3/8	-	-	-
	4+ to 8	-	-	4x1/4	Wall Width minus 1 x 3/8
	8+ to 12	-	-	(2) 4x1/4, 4 oc	Wall Width minus 1 x 3/8
	12+ to 16	-	-	(3) 4x1/4, 4 oc	Wall Width minus 1 x 3/8
6+ to 8	0 to 4	6x4x3/8	-	-	-
	4+ to 8	-	-	5x3/8	Wall Width minus 1 x 3/8
	8+ to 12	-	-	(2) 5x3/8, 4 oc	Wall Width minus 1 x 3/8
8+ to 12	4+ to 8	-	W8x10	-	Wall Width minus 1 x 3/8
	8+ to 12	-	W8x10	-	Wall Width minus 1 x 3/8
Refer to Drawings for conditions other than those listed in chart above.					

2.04 BENT METAL RESTRAINTS

A. Bent Metal Restraints: Bent metal restraints that restrain top of interior masonry walls.
1. Fabricate bent metal restraints from 12 gage, 0.108 inch, thick galvanized sheet steel.

a. L-shaped: 4 inches wide; each leg 4 inches long. Minimum.
2. Finish: Prime painted.
3. Fasteners: As appropriate for indicated substrates.

2.05 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
B. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
1. Fabricate units from slotted channel framing where indicated.
C. Finish: Prime painted unless otherwise indicated or at an exterior location.
D. Fabricate support for suspended toilet partitions as follows:
1. Beams: Continuous steel shapes of size required to limit deflection to L/360 between hangers, but use not less than C8x11.5 channels or another shape with equivalent structural properties.
2. Hangers: Steel rods, 1/2 inch in diameter, spaced not more than 36 inches o.c.
a. Thread rods to receive anchor and stop nuts.
b. Fit hangers with wedge shape washers for full bearing on sloping flanges of support beam.
3. Braces and Angles: Steel angles of size required to rigidly brace and support beams.
E. Roof Openings: Unless otherwise indicated, provide steel support framing for roof openings as follows:.
1. Provide steel support framing around entire perimeter of roof opening; span support framing between primary framing or purlins.
2. Size steel framing not less than the following for spans indicated:
a. Up to 5 feet: C4x5.4 or L4x4x1/4.
b. 5 to 7 feet: C5x6.7 or L5x3-1/2x1/4 (LLV).
c. 7 to 10 feet: C6x8.2 or L6x3-1/2x5/16 (LLV).
d. Refer to Drawings for conditions other than those listed above.
3. Limit deflection to L/240.

2.06 LADDERS

A. Ladders: Steel; in compliance with ANSI A14.3, including landings; with mounting brackets and attachments; prime paint finish, except galvanized at exterior locations and elsewhere as indicated.
1. Elevator pit ladders: Comply with ASME A17.1.
2. Side Rails: 3/8 x 2 inches members spaced at 18 inches, unless otherwise indicated.
3. Rungs: 1 inch diameter solid round bar spaced 12 inches on center, unless otherwise indicated. Slip-resistant surface, Grade 2 - Medium.
a. Space rungs 7 inches from wall surface, unless otherwise indicated.
b. Basis-of-Design Product: Provide SlipNOT, Division of W.S. Molnar Company; SlipNOT Ladder Rung: www.slipnot.com, or a comparable product by one of the following:
1) Brown- Campbell Corp.: www.brown-campbell.com.
2) Substitutions: See Section 01 6000 - Product Requirements.
c. Where galvanized finish is required, rungs shall be galvanized by rung manufacturer.
4. Support brackets: At top and bottom of ladder, and not more than 60 inches on center.
5. Landings and Crossovers: Provide steel bar grating platforms supported by steel angles with railings.
a. Grating: NAAMM MBG 531, welded type.
1) Top Surface: Non-slip, Grade 2 - Medium.
(a) Basis-of-Design Product: Provide SlipNOT, Division of W.S. Molnar Company; SlipNOT Grip Grate: www.slipnot.com, or a comparable product by one of the following:

(1) Substitutions: See Section 01 6000 - Product Requirements.
2) Fabricate to accommodate design loads.
3) Limit openings to no more than 1/2 inch in least dimension.
4) Where galvanized finish is required, grating shall be galvanized by grating manufacturer.

B. Ladder Safety Swing Gates: Steel; ladder safety swing gates shall securely close over ladder and rungs preventing unauthorized use of ladder until gate is unlocked and swung open providing clear access to ladder rungs; prime paint finish, except galvanized at exterior locations and elsewhere as indicated.
1. Gate Frame: Minimum 1-1/2 inch steel tubing with welded corners.
2. Gate Infill Panel: Expanded metal shall completely fill gate frame and be welded securely to gate frame along it's entire perimeter.
a. Standard Expanded Metal:
1) Style: 1/2 inch, No. 13.
2) Open Area: 57 percent.
3) Weight: 1.47 lbs/sq ft.
4) SWD (Short Way of Design): 0.5 inches.
5) LWD (Long Way of Design): 1.2 inches.
3. Gate Size: Width of ladder by 80 inches high, minimum, unless otherwise indicated.
4. Hardware:
a. 5 knuckle steel hinges welded to gate frame and ladder siderails; three minimum.
b. Padlock hasp made of steel plates welded to ladder siderail and gate frame as required to enable the hasp to secure and lock gate across ladder rungs preventing ladder use.

2.07 BOLLARDS

A. Bollards:
1. Standard Fixed Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.
a. Steel Pipe: Schedule 40 steel pipe.
b. Concrete Fill: Refer to Section 03 3000 - Cast-in-Place Concrete.
2. Surface Mounted Bollards: Steel pipe with minimum 3/8 inch thick steel baseplate welded to bollard base for bolting to concrete slab. Drill baseplates at each corner for 3/4 inch anchor bolts. Galvanized finish.
a. Steel Pipe: Schedule 40 steel pipe.
b. Where bollards are to be anchored to sloping concrete slabs, angle baseplates for plumb alignment of bollards.
3. Covers: High-density polyethylene thermoplastic (HDPE) sleeves with rounded domed top.
a. Wall Thickness: 1/4 inch.
b. Color: As selected by Architect from manufacturer’s standard colors.
c. Provide complete with manufacturer's standard adhesive tape for securing sleeve to bollard.
d. Provide covers for all bollards.
e. Basis-of-Design Product: Provide Ideal Shield; 1/4" Bollard Cover: www.idealshield.com, or a comparable product by one of the following:
1) Substitutions: See Section 01 6000 - Product Requirements.

2.08 ELEVATOR HOISTWAY BEAMS

A. Elevator Hoistway Beams: Beam sections; prime paint finish. Size as indicated.

2.09 PREFABRICATED ALTERNATING TREAD STAIRS

A. Alternating Tread Stairs: Open-type alternating tread stair with plate stringers, formed metal treads, and pipe and tube railings; treads shall be slip resistant and shed water.
1. Material: Steel; connections may be welded or bolted.

2. Stair Angle: 68 degrees.
3. Finish: Safety yellow color in powder coat finish.
4. Manufacturer:
   a. Basis-of-Design: Provide product as manufactured by Lapeyre Stair, Inc: www.lapeyrestair.com, or a comparable product by one of the following:
      1) Substitutions: See Section 01 6000 - Product Requirements.

2.10 PREFABRICATED STAIR NOSINGS

A. Prefabricated metal stair nosings.
   1. Manufacturers:
      a. American Safety Tread Co., Inc.: www.americansafetytread.com.
      b. Babcock Davis: www.babcockdavis.com.
      c. Balco, Inc.: www.balcousa.com.
      d. Barry Pattern & Foundry Co., Inc.: www.barrycraft.com.
      e. Nystrom: www.nystrom.com.
      f. Safe-T-Metal Company, Inc.: www.safetmetal.com.
      g. Wooster Products Inc.: www.woosterproducts.com.
      h. Substitutions: See Section 01 6000 - Product Requirements.
B. Exterior Nosings:
   1. Basis-of-Design: American Safety Tread Co., Inc.; Style 816.
   2. Cast iron with embedded non-slip silicon carbide abrasive granules, 3 inches wide with 1 inch lip for casting into concrete.
C. Interior Nosings:
   1. Basis-of-Design: American Safety Tread Co., Inc.; Style 3511.
   2. Extruded aluminum with non-slip ribs of epoxied silicon carbide and aluminum oxide abrasive granules, 3 inches wide with 1/2 inch lip for casting into concrete.
D. Apply bituminous paint to concealed surfaces of prefabricated metal stair nosings.

2.11 MISCELLANEOUS

A. Protective Coating: Zinc molybdate alkyd.
B. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.12 FINISHES - STEEL

A. Prepare surfaces to be primed in accordance with SSPC-SP2.
B. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
C. Prime Painting: One coat.
   1. Provide at all fabrications except at galvanized locations and where otherwise indicated.
D. Where indicated, galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
   1. Locations: All exterior locations and elsewhere as indicated.
E. Where indicated, galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
   1. Locations: All exterior locations and elsewhere as indicated.

2.13 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.
B. Maximum Offset Between Faces: 1/16 inch.
C. Maximum Misalignment of Adjacent Members: 1/16 inch.
D. Maximum Bow: 1/8 inch in 48 inches.
E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.
B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION - GENERAL

A. Install items plumb and level, accurately fitted, free from distortion or defects.
B. Provide 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 as indicated on shop drawings.
D. Perform field welding in accordance with AWS D1.1/D1.1M.
E. Obtain approval prior to site cutting or making adjustments not scheduled.
F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 BENT METAL RESTRAINTS

A. Space restraints 24 inches on center at top of masonry walls, staggered each side of wall.
B. Secure restraints to substrates with appropriate anchors.

3.05 MISCELLANEOUS FRAMING AND SUPPORTS

A. Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.06 BOLLARDS

A. Standard Fixed Bollards:
    1. Anchor bollards in place with concrete footings.
        a. Center and align bollards in holes 3 inches above bottom of excavation.
        b. Place concrete and vibrate or tamp for consolidation.
        c. Support and brace bollards in position until concrete has cured.
        d. Hold top of concrete 8 inches below finish grade, unless otherwise indicated.
    2. Fill bollards solidly with concrete, mounding top surface to shed water.
    3. Refer to Section 03 3000 “Cast-in-place Concrete” for concrete.
B. Surface Mounted Bollards:
    1. Anchor bollard baseplate to existing construction with expansion anchors. Provide four anchors per baseplate, unless otherwise indicated.
C. Install sleeve covers according to manufacturer’s written instructions.

3.07 PREFABRICATED STAIR NOSINGS

A. Install stair nosings in one piece for full width of nosing less 1 inch on each side; where possible.
B. Coordinate installation of stair nosings with installation of cast-in-place concrete; refer to Section 03 3000 - Cast-in-Place Concrete.
C. Apply protective coating to concealed surfaces of prefabricated metal stair nosings in contact with concrete.

3.08 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.
C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 5000

SECTION 07 8100 - APPLIED FIRE PROTECTION

PART 1 GENERAL

1.01SECTION INCLUDES

1.02 SECTION INCLUDES

A. Applied fireproofing.
   1. Portland cement-based.
   2. To be used to repair damaged areas of cementitous fireproofinbg applied to steel framing and deck areas in a natatorium environment (high moisture).

1.03 REFERENCE STANDARDS

A. ASTM E605/E605M - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 2019 (Reapproved 2023).
B. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; 2019 (Reapproved 2023).
C. ASTM E759/E759M - Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2023).
D. ASTM E760/E760M - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2023).
E. ASTM E761/E761M - Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2020).
F. ASTM E859/E859M - Standard Test Method for Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members; 2023.
G. ASTM E937/E937M - Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993 (Reapproved 2023).
H. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with placement of ceiling hanger tabs, mechanical component hangers, and electrical components.
B. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
B. Product Data: Provide data indicating product characteristics.
C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.
D. Field Quality Control Submittals: Submit field test reports.
E. Manufacturer's Qualification Statement.
F. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than 5 years of documented experience.
B. Installer Qualifications: Company specializing in performing work of the type specified and with at least 5 years of documented experience and approved by manufacturer

1.07 MOCK-UP

A. Construct mock-up, 100 square feet in size.
B. Conform to project requirements for fire ratings, thickness, and density of application.
C. Locate where directed.

D. Examine installation within one hour of application to determine variances from specified requirements due to shrinkage, temperature, and humidity.
E. Where shrinkage and cracking are evident, adjust mixture and method of application as necessary; remove materials and re-construct mock-up.
F. Mock-up may remain as part of the Work.

1.08 FIELD CONDITIONS

A. Review compatability and adhesion with existing cementitous fire proofing to insure performance.
B. Do not apply fireproofing when temperature of substrate material and surrounding air is below 40 degrees F or when temperature is predicted to be below said temperature for 24 hours after application.
C. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.
D. Provide temporary enclosure to prevent spray from contaminating air.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Applied Fire Protection:
   1. Carboline: www.carboline.com.
   2. GCP Applied Technologies: www.gcpat.com.
   3. Isolatek International Corp: www.isolatek.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Applied Fireproofing Material For Interior Applications and Exposed to View and Exposed t to High Moisture in a Natatorium Setting: Manufacturer's standard factory mixed material, which when combined with water is capable of providing indicated fire resistance, and conforming to following requirements:
   1. Composition: Gypsum-based; not mineral-fiber-based.
   2. Bond Strength: 150 pounds per square foot, minimum, when tested in accordance with ASTM E736/E736M when set and dry.
   3. Dry Density: Minimum average density of 15 lb/cu ft, with minimum individual density of any test sample of 14 lb/cu ft, when tested in accordance with ASTM E605/E605M.
   4. Compression: 50 psi, when tested in accordance with ASTM E761/E761M.
   5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760/E760M.
   6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937/E937M.
   7. Air Erosion Resistance: Weight loss of 0.025 g/sq ft, maximum, when tested in accordance with ASTM E859/E859M after 24 hours.
   8. Effect of Deflection: No cracking, spalling, or delamination, when tested in accordance with ASTM E759/E759M.
   9. Fungal Resistance: No growth after 28 days when tested according to ASTM G21.
   10. Products:
      a. GCP Applied Technologies; Monokote Z-106 G: www.gcpat.com.
      b. Isolatek International; CAFCO 300: www.isolatek.com.
      c. Substitutions: See Section 01 6000 - Product Requirements.
B. Applied Fireproofing Material for Exposed Applications, and Areas Exposed to Damage and Moisture: Manufacturer's standard factory mixed material, which when combined with water is capable of providing indicated fire resistance, and conforming to following requirements:
   1. Composition: Portland cement-based; not mineral fiber-based.

2. Bond Strength: 2,000 psf, minimum, when tested in accordance with ASTM E736/E736M when set and dry.
3. Dry Density: 21 lb/cu ft, minimum, when tested in accordance with ASTM E605/E605M.
4. Compression: 100 psi, when tested in accordance with ASTM E761/E761M.
5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760/E760M.
6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937/E937M.
7. Air Erosion Resistance: Weight loss of 0.025 g/sq ft, maximum, when tested in accordance with ASTM E859/E859M after 24 hours.
8. Fungal Resistance: No growth after 28 days when tested according to ASTM G21.
9. Products:
   a. GCP Applied Technologies; Monokote Z-106/HY: www.gcpat.com.
   b. Isolatek International; CAFCO 400: www.isolatek.com.
   c. Carboline; Pyrocrete 239: www.carboline.com.
   d. Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESSORIES

A. Primer Coating: Adhesive or bonding agent of type recommended by applied fireproofing manufacturer and compatible with substrates.
B. Metal Lath: Expanded metal lath; minimum weight of 3.4 psf, galvanized finish.
C. Water: Clean, potable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive fireproofing.
B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
C. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.
D. Verify that voids and cracks in substrate have been filled.
E. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.

3.02 PREPARATION

A. Perform tests as recommended by fireproofing manufacturer in applications where adhesion of fireproofing to substrate is in question.
B. Remove incompatible materials that could effect bond by scraping, brushing, scrubbing, or sandblasting.
C. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.
D. Apply fireproofing manufacturer's recommended bonding agent on primed steel.
E. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
F. Close off and seal duct work in areas where fireproofing is being applied.

3.03 APPLICATION

A. Install metal lath over structural members as indicated or as required by UL Assembly Design Numbers.
B. Apply primer coating and fireproofing in accordance with manufacturer's instructions.
C. Apply fireproofing in uniform thickness and density as necessary to achieve required ratings.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 4000 - Quality Requirements.

B. Independent Inspection Agency: Owner will engage a qualified inspection agency to inspect fireproofing installations and perform special inspections as required by code.

C. Inspections shall include:
   1. All special inspections required by code.
   2. Inspect installed fireproofing after application and curing for integrity, prior to its concealment.
   3. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings and requirements of authorities having jurisdiction (AHJ).
   4. Re-inspection of installed fireproofing for integrity of fire protection, after installation of subsequent Work.

D. Repair or replace applied fireproofing at locations where test results indicate fireproofing does not meet specified requirements.

3.05 CLEANING

A. Remove excess material, overspray, droppings, and debris.

B. Remove fireproofing from materials and surfaces not required to be fireproofed.

C. At exposed fireproofing, clean surfaces that have become soiled or stained, using manufacturer's recommended procedures.

END OF SECTION 07 8100

SECTION 07 9200 - JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.
B. Self-leveling pourable joint sealants.
C. Joint backings and accessories.
D. Section 07 8400 - Firestopping: Firestopping sealants.
E. Section 07 9100 - Preformed Joint Seals: Precompressed foam, gaskets, and strip seals.
F. Section 08 8000 - Glazing: Glazing sealants and accessories.
G. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).
B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).
C. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).
D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
E. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.
F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
G. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.
H. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.
I. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2025).
J. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
    1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
    2. List of backing materials approved for use with the specific product.
    3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
    4. Substrates the product should not be used on.
    5. Substrates for which use of primer is required.
    6. Sample product warranty.
C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
D. Color Cards for Selection: Where custom colors are not specified, submit manufacturer's color cards showing standard colors available for selection.
E. Samples for Verification: For each sealant color, submit at least three physical samples for color verification.

1. Provide 1/2 inch wide joint sealant samples formed between two 4 inch long strips of material matching appearance of exposed surfaces adjacent to joint sealants.

F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

G. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

H. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and with at least 5 years of documented experience.

C. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.

1. Adhesion Testing: In accordance with ASTM C794.
2. Compatibility Testing: In accordance with ASTM C1087.
3. Stain Testing: In accordance with ASTM C1248; required only for stone substrates.
4. Allow sufficient time for testing to avoid delaying the work.
5. Deliver to manufacturer sufficient samples for testing.
6. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
7. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

D. Owner may employ an independent testing agency to perform the field quality control inspection and testing as referenced in PART 3 of this section and as follows, to prepare and submit the field quality control plan and log, and to provide recommendations of remedies in the case of failure.

1. Contractor shall cooperate with testing agency and repair failures discovered.
2. Otherwise, if Owner does not employ an independent testing agency, Contractor shall perform its own field quality control measures including the following:
   a. Field Quality Control Plan and Log.
   b. Field Adhesion Test Procedures.

E. Field Quality Control Plan:

1. Visual inspection of entire length of sealant joints.
2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
   a. For each different sealant and substrate combination, allow for one test every 12 inches in the first 10 linear feet of joint and one test every 120 inches thereafter.
   b. If any failures occur in the first 10 linear feet, continue testing at 48 inch intervals at no extra cost to Owner.

F. Field Adhesion Test Procedures:

1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.
3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
4. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
5. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.
   a. Record results on Field Quality Control Log.

b. Repair failed portions of joints.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

A. Scope:

1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
   a. Wall expansion and control joints.
   b. Joints between door, window, and other frames and adjacent construction.
   c. Joints between different exposed materials.
   d. Openings below ledge angles in masonry.
   e. Other joints as indicated.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
   a. Joints between door, window, and other frames and adjacent construction.
   b. Other joints as indicated.
3. Do not seal the following types of joints.
   a. Intentional weepholes in masonry.
   b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
   c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
   d. Joints where installation of sealant is specified in another section.
   e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.

1. Control and Expansion Joints in Concrete Paving: Self-leveling silicone traffic-grade sealant.

C. Interior Joints: Use non-sag acrylic emulsion latex sealant, unless otherwise indicated.

1. Interior Sides of Aluminum Framing in Exterior Walls: Use non-sag non-staining silicone sealant, unless otherwise indicated.
   a. Includes, but is not limited to, curtain walls, storefronts, and metal-framed skylights.
2. Control Joints in Interior Concrete Slabs: Self-leveling silicone "traffic grade" sealant.
3. Column Isolation Joints in Interior Concrete Slabs: Self-leveling silicone "traffic grade" sealant.
4. Floor Joints in Wet Areas: Self-leveling silicone "traffic grade" sealant; not for continuous liquid immersion
5. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; clear, unless otherwise indicated.
6. Joints between countertops and walls: Mildew-resistant silicone sealant; clear, unless otherwise indicated.

D. Interior Wet Areas: Includes, but is not limited to, toilet rooms, showering areas, locker rooms, kitchens, and food service areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

2.02 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Type S, Uses NT, A, G, M and O; not expected to withstand continuous water immersion or traffic.

1. Movement Capability: Plus and minus 50 percent, minimum.

2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Hardness Range: Comply with one of the following:
   a. 15 to 35, Shore A, when tested in accordance with ASTM C661.
   b. 25 to 35, Shore A, when tested in accordance with ASTM D2240.
5. Color: Custom color(s) to match Architect's sample(s).
6. Cure Type: Single-component, neutral moisture curing.
7. Service Temperature Range: Minus 40 to 250 degrees F.
8. Products:
   a. Momentive Performance Materials, Inc./GE; SCS9000 SilPruf NB: www.siliconeforbuilding.com.
   b. Pecora Corporation; 890NST: www.pecora.com.
   c. Sika Corporation; Sikasil WS-295 FPS: www.usa.sika.com.
   d. Tremco, Inc.; Spectrem 3: www.tremcosealants.com.
   e. Dow Chemical Company; DOWSIL 790 Silicone Building Sealant: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
   f. Substitutions: See Section 01 6000 - Product Requirements.

B. Traffic Grade Silicone Sealant: ASTM C920, Grade NS, Type S, Uses T, M, and O; not expected to withstand continuous water immersion.
1. Movement Capability: Plus 100 percent, minus 50 percent, minimum
2. Hardness Range: Comply with one of the following:
   a. 5 to 15, Shore A, when tested in accordance with ASTM C661.
   b. 85, Shore 00, when tested in accordance with ASTM C661.
3. Color: To be selected by Architect from manufacturer's full range.
4. Cure Type: Single-component, neutral moisture curing.
5. Service Temperature Range: Minus 40 to 250 degrees F.
6. Products:
   a. Dow Corning; NS Parking Structure Sealant: www.dowcorning.com.
   b. Pecora Corporation; 311NS: www.pecora.com.
   c. Sika Corporation; Sikasil - 728 NS: www.usa.sika.com.
   d. Tremco, Inc.; Spectrem 800: www.tremcosealants.com.
   e. Substitutions: See Section 01 6000 - Product Requirements.

C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Type S, Uses NT, A, G, and O; mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: Comply with one of the following:
   a. 15 to 35, Shore A, when tested in accordance with ASTM C661.
   b. 25 to 35, Shore A, when tested in accordance with ASTM D2240.
3. Color: Clear.
4. Cure Type: Single-component, acetoxy or neutral moisture curing .
5. Service Temperature Range: Minus 40 to 300 degrees F.
6. Products:
   a. Dow Corning; 786 Sealant M: www.dowcorning.com.
   b. Momentive Performance Materials, Inc./GE; SCS1700 Sanitary: www.siliconeforbuilding.com.
   c. Pecora Corporation; 898NST: www.pecora.com.
   d. Sika Corporation; Sikasil - GP: www.usa.sika.com.
   e. Tremco, Inc.; Tremsil 200 with fungicide: www.tremcosealants.com.
   f. Substitutions: See Section 01 6000 - Product Requirements.

D. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use. Siliconized.
1. Color: To be selected by Architect from manufacturer's full range.

2. Grade: ASTM C834; Grade Minus 18 Degrees C (0 Degrees F).
3. Products:
   a. Franklin International Inc; Titebond Painter's Plus Caulk: www.titebond.com.
   b. Pecora Corporation; AC-20 +Silicone: www.pecora.com.
   c. Sherwin Williams; 950A Siliconized Acrylic Latex Caulk: www.sherwin-williams.com.
   d. Tremco, Inc.; Tremflex 834: www.tremcosealants.com.
   e. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SELF-LEVELING SEALANTS

A. Self-Leveling Silicone Sealant: ASTM C920, Type S, Grade P, Uses T, M and O; single-component, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
   1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
   2. Hardness Range: Comply with one of the following:
      a. 5 to 20, Shore A, when tested in accordance with ASTM C661.
      b. 40 to 85, Shore 00, when tested in accordance with ASTM D2240.
   3. Color: To be selected by Architect from manufacturer's full range.
   4. Cure Type: Single-component, neutral moisture curing.
   5. Service Temperature Range: Minus 50 to 300 degrees F.
   6. Products:
      a. Dow Corning; SL Parking Structure Sealant: www.siliconeforbuilding.com.
      b. Pecora Corporation; 310SL: www.pecora.com.
      c. Sika Corporation; Sikasil-728 SL: www.usa.sika.com.
      d. Tremco, Inc.; Spectrem 900SL: www.tremcosealants.com.
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
   1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
   2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
   3. Bi-Cellular: 25 to 33 percent larger in diameter than joint width.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
B. Perform installation in accordance with ASTM C1193.
C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.
D. Install bond breaker backing tape where backer rod cannot be used.
E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.
I. Installation of Two-Stage Joints at Precast Architectural Concrete Units:
    1. Joint system consists of two back-to-back sealant joints at each precast architectural concrete unit joint with a weep at the bottom of the unit joint per Precast/Prestressed Concrete Institute (PCI) recommendations and as follows:
        a. Inner (Secondary) Seal: Inner secondary backer rod and sealant joint is installed a minimum of 2 to 2-1/2 inches beyond the exposed face of the precast architectural concrete panels within the panel joint itself.
        b. Exterior (Primary) Seal: Following the installation of the secondary joint, the outer primary backer rod and sealant joint is installed at the face of the precast architectural concrete panels with a weep at the bottom of the joint. Leave open continuous air space between the primary backer rod and inner secondary seal.
        c. Install 3/8 inch minimum weep openings in the exterior seal to allow water penetrating the exterior seal and contained by the inner seal to exit the cavity between joint seals.
            1) Do not install weeps below finish grades.
        d. Near the junction of horizontal and vertical joints, the inner seal must turn out to the plane of the exterior seal at regular intervals to force water out of the joint.

3.04 FIELD QUALITY CONTROL

A. Owner may employ an independent testing agency to perform field quality control inspection and testing as specified in PART 1 under QUALITY ASSURANCE article.
B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.
C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION 07 9200

SECTION 09 0561 - COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing of concrete floor slabs for moisture and alkalinity (pH).
B. Remedial floor coatings for concrete floor slabs.

1.02 PRICE AND PAYMENT PROCEDURES

A. Remedial Floor Coatings.
   1. Contractor shall perform all required remediation of concrete floor slabs;
      a. Contractor shall perform the work at no additional cost to Owner where moisture vapor reduction admixture (MVRA) was required as part of the concrete mix design.
      b. Where remedial floor coating was indicated, Contractor shall perform the work at no additional cost to Owner
      c. Where a moisture vapor reduction admixture (MVRA) was not required and at floor slabs where remedial floor coatings were not indicated, a contract modification will be issued based upon the following:
         1) Unit pricing as specified in Section 01 2200 - Unit Prices.
         2) Contingency allowance as specified in Section 01 2100 - Allowances.
         3) No unit pricing or allowances were provided; Contractor shall record and submit written records of costs, including material quantities used, number of labor hours used, and total area, in square feet, of remediated concrete.

1.03 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
B. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.
C. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
D. ASTM F3010 - Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings;2018.
E. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.05 SUBMITTALS

A. Testing Reports:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Submit reports to Architect.
   6. Submit reports not more than two business days after conclusion of testing.
B. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
   1. Manufacturer's statement of compatibility with types of flooring, including adhesives, applied over remedial product.
   2. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

1.06 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
   1. At Contractor's option, tests may be performed by the Contractor.
B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
C. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and at least 5 years' experience installing moisture emission coatings.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer’s instructions and recommendations.
B. Deliver materials in manufacturer’s packaging; include installation instructions.
C. Keep materials from freezing.

1.08 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.
B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Remedial Floor Coating: Single- or multi-layer coating intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Material: Comply with ASTM F3010.
   2. Thickness: As required for application and in accordance with manufacturer's installation instructions.
   3. Provide resistance to up to 95 percent relative humidity and 15 pounds moisture vapor transmission.
   4. Provide resistant to alkalinity (pH) level of pH 14.
   5. Products:
      a. Maxxon Corporation; Aquafin Vaportight Coat-SG4: www.maxxon.com.
      b. Schonox, HPS North America, Inc.; MR-18: www.hpsubfloors.com.
      c. Specialty Products Group; Vapor Lock 0/0: www.spggogreen.com.
      d. Spray-Lock; SCP 578: www.concreteprotection.com.
      e. Tnemec Company, Inc; Epoxoprime MVT Series 208 : www.tnemec.com.
      f. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.
B. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
   2. Preliminary cleaning.

3. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
4. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
5. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
6. Patching, smoothing, and leveling, as required.
7. Other preparation specified.
8. Adhesive bond and compatibility test.
9. Protection.

C. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
2. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Moisture vapor emission testing for concrete floor slabs.
1. Test where adhesive applied floor finishes are to be installed, and where indicated.
a. Including:
1) Wood gymnasium flooring.
2) Wood stage flooring.
3) Epoxy matrix terrazzo flooring.

B. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
C. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
D. Test in accordance with ASTM F1869 and as follows.
E. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.
F. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.
1. After remedial floor coating has been applied, perform the test again.
a. If test values exceed floor covering manufacturer's limits, notify Architect immediately and await further instructions. Do not install finish flooring until authorized.

G. Report: Report the information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

A. Internal relative humidity testing for concrete floor slabs.
   1. Test where adhesive applied floor finishes are to be installed, and where indicated.
      a. Including:
         1) Wood gymnasium flooring.
         2) Wood stage flooring.
B. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
C. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
D. Test in accordance with ASTM F2170 Procedure A and as follows.
E. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
F. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
   1. After remedial floor coating has been applied, perform the test again.
      a. If test values exceed floor covering manufacturer's limits, notify Architect immediately and await further instructions. Do not install finish flooring.
G. Report: Report the information required by the test method.

3.06 ALKALINITY TESTING

A. Alkalinity testing for concrete floor slabs.
   1. Test where adhesive applied floor finishes are to be installed, and where indicated.
B. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
C. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
   1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
   2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
   3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.
D. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.
   1. After remedial floor coating has been applied, perform the test again.
      a. If test values exceed floor covering manufacturer's limits, notify Architect immediately and await further instructions. Do not install finish flooring until authorized.
E. Report: Report test results.

3.07 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.
B. Apply remedial floor coating to concrete slabs that fail one or more of the following tests:
   1. Moisture vapor emission testing .
   2. Internal relative humidity testing.
   3. Alkalinity testing.

C. Install in accordance with remedial floor coating manufacturer's instructions and as follows:
   1. Shot blast or mechanically abrade concrete surfaces to meet surface profile of 3 to 4 per ICRI 310.2R; acid etching is not permitted.
   2. Vacuum and clean slab to remove all dust, dirt, and debris.
   3. Apply one to two coats of remedial floor coating as recommended by remedial floor coating manufacturer.

3.08 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION 09 0561

SECTION 09 3000 - HARD TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hard tile.
B. Tile setting materials, grout, sealants, and accessories.
C. Waterproofing, Uncoupling, and Crack Isolation Membranes.

1.02 REFERENCE STANDARDS

A. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.
B. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.
C. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2023.
D. ANSI A118.11 - American National Standard Specifications for EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2017 (Reaffirmed 2022).
E. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2024).
F. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2023.
G. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.
H. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2024.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
D. Samples:
    1. Full-size units of each type of tile and each color and finish.
    2. Full-size units of each type of trim, threshold and accessory for each color and finish.
        a. Trim and Threshold Samples: 4 inches long, minimum.
E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
    1. See Section 01 6000 - Product Requirements, for additional provisions.
    2. Extra Tile: 2 percent of each size, color, and surface finish combination, but not less than one box of each type.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
B. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.

C. Source Limitations for Setting Materials and Accessories: Obtain product of a uniform quality for each application condition from a single manufacturer:

D. Preinstallation Conference: Conduct conference at the Project Site.
   1. Convene one week prior to commencing work of this section.
   2. Require attendance of installation material manufacturer, tile supplier, tile installer, and intallers of related work. Review installation procedures and coordination required with related work.
   3. Meeting agenda includes, but is not limited to:
      a. Surface preparation.
      b. Tile and installation material compatibility.
      c. Manufacturer and installer warranty duration and scope coverd by warranty.
      d. Edge protection, transition, and pre-fabricated movement joint profiles.
      e. Waterproofing techniques.
      f. Crack isolation techniques.

1.06 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Construct mockups to demonstrate aesthetics and quality of materials and execution.
   1. Build mock-up of each type of floor tile and installation method.
   2. Build mock-up of each type of wall tile and installation method.
   3. Build mock-up of any other specific locations as requested by the Architect.
   4. Mockup sizes shall be sized as appropriate to demonstrate complete tile pattern layout; 16 square feet, minimum.
   5. Approved mock-ups may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to project site in manufacturer's original, unopened containers with labels intact. Inspect materials and notify manufacturer of any discrepancies.

B. Storage: Store materials as directed by manufacturer's written instructions.

1.08 FIELD CONDITIONS

A. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Floor Tile: Floor tile shall comply with the following:
   1. Dynamic Coefficient of Friction (DCOF): 0.42 or greater when tested in accordance with DCOF AcuTest per ANSI A137.1.

2.02 HARD TILE

A. CT1 Floor Tile: ANSI A137.1 standard grade.
   1. Size: 2 by 2 inch, nominal.
   2. Thickness: 1/4 inch, nominal.
   3. Surface Finish: Unglazed.
   4. Color(s): Salt and Pepper 0A12
   5. Joint Size: Match existing.
   6. Products:
      a. American Olean; Unglazed Mosaics: www.americanolean.com.
      b. Substitutions: Not permitted.
      c. Distributor: Virginia Tile.
      d. Manufacturer's Representative: Kathleen Black, kathleen.black@virginiatile.com, 248.467.4363

2.03 SETTING MATERIALS

A. Latex-Portland Cement Thin-Set Mortar Bond Coat: ANSI A118.4, ANSI A118.11 andANSI A118.15 .

1. Products:
   a. Bostik, Inc; Bostik PM: www.bostik.com.
   b. Custom Building Products; VersaBond Flex Professional Thin-Set Mortar: www.custombuildingproducts.com.
   c. H.B. Fuller Construction Products, Inc; Sturdi Flex Thin Set Mortar: www.tecspecialty.com/#sle.
   d. LATICRETE International, Inc; 253 Gold: www.laticrete.com.
   e. MAPEI Corp.; Porcelain Tile Mortar: www.mapei.com.
   f. Schluter Systems L.P.; All Set Thinset Morter; www.schluter.com
   g. Substitutions: See Section 01 6000 - Product Requirements.

2.04 GROUTS

A. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
   1. Color(s): As selected by Architect from manufacturer's full line, unless otherwise indicated .
   2. Products:
      a. Bostik, Inc; EzPoxy EzClean: www.bostik.com.
      b. Custom Building Products; CEG-Lite 100% Solids Commercial Epoxy Grout : www.custombuildingproducts.com.
      c. H.B. Fuller Construction Products, Inc; TEC AccuColor EFX Epoxy Grout and Mortar : www.tecspecialty.com/#sle.
      d. LATICRETE International, Inc; SPECTRALOCK Pro Premium: www.laticrete.com.
      e. MAPEI Corp.; Kerapoxy or Kerapoxy CQ: www.mapei.com
      f. Substitutions: See Section 01 6000 - Product Requirements.
         1) Substitutions will only be accepted for manufacturers for epoxy grout. Product substitutions for other than epoxy grouts will not be accepted.

2.05 JOINT SEALANTS

A. Tile Sealants - Traffic Grade:
   1. Refer to Section 07 9200 - Joint Sealants.
      a. Provide Nonsag traffic grade silicone sealant or self-leveling silicone sealant.

B. Tile Sealant - Non-traffic Grade: Gunnable siliconized acrylic; moisture and mildew resistant type.
   1. Color(s): To match adjacent grout color(s).
   2. Products:
      a. Bostik, Inc; Bosti-Flex Plus: www.bostik.com.
      b. Custom Building Products; Polyblend Ceramic Tile Caulk: www.custombuildingproducts.com.
      c. LATICRETE International, Inc; Premium Acrylic Caulk: www.laticrete.com.
      d. MAPEI Corp.; Keracaulk S (sanded) and Keracaulk U (unsanded): www.mapei.com.
      e. TEC, H.B. Fuller Construction Products Inc; AccuColor Sanded/Unsanded Siliconized Acrylic Caulk: www.tecspecialty.com.
      f. Substitutions: See Section 01 6000 - Product Requirements.

2.06 MAINTENANCE MATERIALS

A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
   1. Composition: Water-based.
   2. Color(s): Clear, colorless.
   3. Products:
      a. Bostik, Inc; Grout Sealer & Colorant: www.bostik.com.
      b. Custom Building Products; Aqua Mix Sealer's Choice Gold: www.custombuildingproducts.com.
      c. LATICRETE International, Inc; STONETECH Heavy Duty Sealer: www.laticrete.com.
      d. MAPEI Corp.; UltraCare Penetrating Plus Stone, Tile & Grout Sealer: www.mapei.com.

e. Substitutions: See Section 01 6000 - Product Requirements.

2.07 WATERPROOFING AND CRACK ISOLATION MEMBRANE

A. Waterproofing and Crack Isolation Membrane: Elastomeric liquid applied membrane complying with ANSI A118.10 and ANSI A118.12.
   1. Applications: Use at the following locations:
      a. All floor and traffic areas.
      b. Shower walls and floors.
      c. Shower pans and walls.
      d. Other areas as indicated.
   2. Thickness: As recommended by membrane manufacturer.
   3. Crack Resistance: No failure at 1/8 inch gap, minimum.
   4. Membrane system may or may not include fabric reinforcing.
   5. Products:
      a. Without Fabric Reinforcing:
         1) Custom Building Products; RedGard: www.custombuildingproducts.com.
         2) LATICRETE International, Inc; Hydro Ban: www.laticrete.com.
         3) LATICRETE International, Inc; Hydro Barrier: www.laticrete.com.
         4) MAPEI Corp.; Mapelastic AquaDefense: www.mapei.com.
         5) Substitutions: See Section 01 6000 - Product Requirements.
      b. With Fabric Reinforcing:
         1) Bostik, Inc; GoldPlus: www.bostik.com.
         2) Custom Building Products; 9240 Waterproofing and Anti-Fracture Membrane: www.custombuildingproducts.com.
         3) MAPEI Corp.; Mapelastic AquaDefense: www.mapei.com.
         4) TEC, H.B. Fuller Construction Products Inc; HydraFlex: www.tecspecialty.com.
         5) Substitutions: See Section 01 6000 - Product Requirements.

2.08 WATERPROOFING - SHEET APPLIED MEMBRANE

A. Waterproofing Membrane: Sheet Applied membrane complying with ANSI A118.10 andANSI A118.12 .
   1. Schluter Systems; L.P. KERDI / KERDI DS Membrane: www.schluter.com.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
   1. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
   2. Verify that substrates comply with tolerances of TCNA (HB).
B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
   1. Verify that substrates comply with tolerances of TCNA (HB).

3.02 PREPARATION

A. Protect surrounding work from damage.
B. Vacuum clean surfaces and damp clean.

3.03 INSTALLATION - GENERAL

A. Install tile and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
B. Install waterproofing and crack isolation membrane according to manufacturer's instructions and TCNA (HB) recommendations.
   1. Applications: Use at the following locations:
      a. All floor and traffic areas.
      b. Shower walls and floors.

c. Other areas as indicated.

C. Bond Coats:
1. Use latex-portland cement thin-set mortar, unless otherwise indicated.
a. Exceptions:
1) For tiles that have at least one side greater than 15 inches long, use large format tile latex-portland cement medium-bed mortar.
2) For large areas of glass tile, other than accents and bands, use glass tile latex-portland cement thin-set mortar.
b. Bond Coat Color: White or gray.
1) Exception: White at glass tiles.

D. Grout:
1. Use epoxy grout.

E. Install tile prior to installation of equipment, cabinets, and other recessed and surface mounted items.

F. Completely cover substrates with tile, including those which will be under and behind surface mounted items in finished construction.

G. Lay tile from center lines outward unless otherwise indicated.

H. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

I. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly.

J. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

K. Form internal angles square and external angles square, with metal trim, or bullnose trim pieces as indicated.

L. Install accessories rigidly in place in accordance with manufacturer's instructions..

M. Install metal trim in accordance with manufacturer's instructions.

N. Sound tile after setting. Replace hollow sounding units.

O. Keep control and expansion joints free of mortar, grout, and adhesive.

P. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

Q. Grout tile joints unless otherwise indicated.

R. Joint Sealant:
1. Use joint sealant at the following locations instead of grout.
a. Tile changes in plane.
b. Tile-to-tile control joints .
c. Junctions of tile and dissimilar materials
d. And elsewhere as required by TCNA (HB), EJ171 movement joint guidelines.
2. Install joint sealant with bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

S. Grout Sealers:
1. Seal the following:
a. High performance grout joints only as recommended by grout manufacturer.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over concrete substrates, install in accordance with TCNA (HB) Method F122 or F122A, as appropriate to substrate conditions.
1. Provide waterproofing and crack isolation membrane.

3.05 CLEANING

A. Clean tile and grout surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION 09 3000

SECTION 09 8436 - ACOUSTIC CEILING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Baffles:
   1. Fabric-wrapped, glass-fiber board baffles.

1.02 REFERENCE STANDARDS

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023.
B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's printed data sheets for products specified.
C. Shop Drawings: Fabrication and installation details, panel layout, and fabric orientation.
D. Verification Samples: Submit 3 samples of each type and finish of panel specified; 12 by 12 inch, showing construction, edge details, finish, and mounting method.
E. Test Reports: Certified test data from an independent test agency verifying that panels meet specified requirements for acoustical and fire performance.
F. Manufacturer's Qualification Statement.
G. Installer's Qualification Statement.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company with not less than five years of experience in manufacturing acoustical products similar to those specified.
B. Installer Qualifications: Company specializing in installing acoustic wall units with minimum 5 years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect acoustical units from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until units are needed for installation.
B. Store units flat, in dry, well-ventilated space; do not stand on end.
C. Protect edges from damage.

1.06 MOCK-UP

A. See Section 01 4000 - Quality Requirements, for additional mock-up requirements.
B. For each type of acoustical ceiling unit, build mockup of typical ceiling area include a minimum of 2 acoustical ceiling units. Construct mock-ups of acoustical units at locations indicated by Architect.
   1. Approved mock-ups may remain as part of the Work.

PART 2 PRODUCTS

2.01 FABRIC-WRAPPED GLASS-FIBER BOARD BAFFLES

A. Drawing Designations: AP1
B. Products:
   1. MBI Products Company, Inc; Cloud-Lite Baffles: www.mbiproducts.com.
   2. Substitutions: Not permitted.
C. Panel Core: Manufacturer's rigid or semi-rigid fiberglass core.
D. Edges: Perimeter edges reinforced by hot sealed seams.
E. Fabrics: Manufacturer's standard PVC Finish, 2-3 mil
   1. Color: White
F. Panel Shape: Flat.
G. Bottom Edge Profile: Square.

H. All Other Edges: Square.
I. Nominal Overall Panel Thickness: 2 inches.
J. Panel Sizes and Shapes - Length and Height: 2 by 4 feet.
K. Mounting Method: Manufacturer's standard Grommet in Flap Method.
   1. Include cables, clamps, and accessories for complete installation; stainless steel or other non-corrosive or other non-corrosivematerial.
L. Performance Requirements:
   1. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   2. Sound Asorption:
      a. 2 inch Panels: 1.75 Sabins/sq. ft. when tested in accordance with ASTM C423.

2.02 FABRICATION

A. Use manufacturer's standard methods of construction; fabricate panels to sizes and configurations as indicated.
B. Fabric facings shall be installed without sagging, wrinkles, blisters, or visible seams.
   1. Where contoured surfaces or corners are indicated, install fabric to avoid seams or gathering of material.
C. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 inch for thickness, overall length and width, and squareness from corner to corner.

2.03 ACCESSORIES

A. Mounting Hardware - General: Manufacturer's standard hardware designed to support full weight of panels.
B. Ceiling-Suspended Accessories: Manufacturer's standard accessories at locations as indicated on each acoustical unit, sized appropriately for weight of acoustical unit.
   1. Provide supplemental Slotted Channel Framing to bridge between structural member as required for hanger installation. See section 05 5000 - Metal Fabrications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of acoustical units. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install acoustical units in locations as indicated, following manufacturer's installation instructions.
B. Suspend ceiling baffles at locations and heights as indicated
C. Set diffuser panels in metal grid suspension system at locations indicated.
D. Hang suspended panels independent of walls, columns, ducts, pipes and conduit.
   1. Connect hangers directly to structure, inserts, eye screws, or other connections that are secure and appropriate for substrate. Connections shall not deteriorate or corrode.
   2. Fasten hangers to structural members, cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
      a. Do not attach hangers to metal forms, steel deck tabs, or metal decking.
   3. Install hangers plumb except where required to miss obstructions; brace splayed hangers as required to offset horizontal forces.
   4. Install supplemental hanger supports to bridge large ducts and other wide obstacles that interfere with required hanger spacings or when steel framing is not located appropriately for required hanger spacings.
   5. Size hangers and supplemental supports to support panel loads.
   6. Hangers shall not contact adjacent materials within the ceiling plenum.
E. Install acoustical units to construction tolerances of plus or minus 1/16 inch for the following:

1. Plumb and level.
2. Flatness.
3. Width of joints.

3.03 CLEANING

A. Clean acoustical units upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

3.04 PROTECTION

A. Provide protection of installed acoustical panels until Date of Substantial Completion.

B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

END OF SECTION 09 8436

SECTION 09 9123 - INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.
B. Field application of paints.
C. Specification for Canyon Tone for clear block sealer is in Specification 07 1900 Water Repellent Acrylic Penetrating Sealer.
D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Brick, architectural concrete, cast stone, integrally colored plaster, and stucco.
   9. Glass.
   10. Acoustical materials, unless specifically indicated.
   11. Concealed pipes, ducts, and conduits.

1.02 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.
B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.
C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.
D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
F. SSPC-SP 13 - Surface Preparation of Concrete; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. MPI product number (e.g., MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.

D. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

1.05 MOCK-UP

A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
B. Provide panel, ____ feet long by ____ feet wide, illustrating paint color, texture, and finish.
C. Provide door and frame assembly illustrating paint color, texture, and finish.
D. Locate where directed by Architect.
E. Mock-up may remain as part of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.
D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
B. Provide paints and finishes from the same manufacturer to the greatest extent possible.
    1. If a single manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
    2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
    3. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.
    4. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
C. Paints:
    1. Pittsburgh Paints: www.pittsburghpaints.com/#sle.
    2. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
    3. Benjamin Moore; www.benjaminmoore.com/#sle
D. Primer Sealers: Same manufacturer as top coats.
E. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.

1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
5. Supply each paint material in quantity required to complete entire project's work from a single production run.
6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
b. Architectural coatings VOC limits of the State in which the Project is located.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.
2. Extend colors to surface edges; colors may change at any edge as directed by Architect.
3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.
4. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.
5. During bidding, price accent walls as low-hide colors. Include pricing for additional prep and coats as required.

2.03 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been adequately prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Remove or repair existing paints or finishes that exhibit surface defects.
D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
E. Seal surfaces that might cause bleed through or staining of topcoat.
F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
G. Masonry:
    1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
    2. Prepare surface as recommended by top coat manufacturer.
H. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
I. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
J. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.
K. Previously Painted Existing Surfaces:
    1. Remove all loose paint, dust, dirt, mold, mildew, oil, grease, rust, loose mill scale, mortar, and any other surface contamination.
    2. Scrape all loose, blistered, peeling, scratched or otherwise imperfect paint down to bare substrate and sand adjacent tightly adhering paint to feather edge.
        a. Tightly adhered existing paint may remain.
        b. Spot prime all bare areas with appropriate primer before re-priming entire surface.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
D. Sand wood and metal surfaces lightly between coats to achieve required finish.
E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.
B. Owner will provide field inspection.
C. Adhesion Test to be performed per ASTM D3359 Method A (5mils or less) or B (over 5mils)
D. All coatings shall be inspected as follows:
    1. Coatings shall be rejected for the following:
        a. Lacking minimum dry film thicknesses.
            1) Inspector may test for proper dry film thickness using methods as recommended by the inspector.
        b. Poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, and corners.
        c. Damage from touching, or disturbing paint in any other manner, before sufficiently dry.

d. Damage from application to moist surfaces or damage caused by inadequate protection from the weather.
e. Damage or contamination of paint from blown contaminants including but not limited to dust.

2. Coatings shall be rejected if any of the following are evident under natural lighting for exterior surfaces and final lighting source, including daylighting, for interior surfaces:
a. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 48 inches.
b. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 48 inches.
c. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles from a distance of not less than 48 inches.

E. Visible defects are defined as follows:
1. Brush and roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
2. When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.

F. Coatings rejected by the inspection shall be repaired or replaced at the expense of the Contractor.

G. Small affected areas shall be touched up.
1. Large affected areas shall be repainted.
2. Small and large areas shall be as defined by the Architect.
3. Areas without sufficient dry film thickness shall be repainted.
4. Paint runs and sags shall be removed by scraper or sanding and repainted.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.
B. Touch-up damaged finishes after Substantial Completion.

3.07 SCHEDULE - PAINT SYSTEMS

A. Concrete, Concrete Masonry Units (CMU), Concrete Block, Brick Masonry: Finish surfaces exposed to view.
1. Interior: CI-OP-3L, semi-gloss.

B. Gypsum Board: Finish surfaces exposed to view.
1. Interior Ceilings and Bulkheads: GI-OP-3L, flat.
2. Interior Walls: GI-OP-3L, eggshell.

C. Wood: Finish surfaces exposed to view.
1. Interior trim and frames: WI-OP-3L, semi-gloss.

D. Steel Doors and Frames: Finish surfaces exposed to view; MI-OP-MD-DT, semi gloss.

E. Steel Fabrications: Finish surfaces exposed to view.
1. Interior: MI-OP-3L, semi gloss.

F. Galvanized Steel: Finish surfaces exposed to view.
1. Interior: Mgl-OP-3L.

G. Shop-Primed Metal Items: Finish surfaces exposed to view.
1. Finish the following items:
a. Elevator pit ladders.
b. Exposed surfaces of steel stairs and railings.

H. Pipe and Duct Insulation Jackets: Finish surfaces exposed to view; FI-OP-3A, flat.

3.08 COLOR SCHEDULE

A. Colors below are design intent only. Final color selections to be provided, post-bids, in color and finish schedule. Additional color may be added to the color and finish schedule.

B. EP1
   1. Sherwin Williams, SW 7005 Pure White

C. EP2
   1. Sherwin Williams, SW 6258 Tricorn Black

D. EP3
   1. Custom Color to match "OU Gold"

E. EP4
   1. Sherwin
   2. Sherwin Williams, SW 7017 Dorian Grey

END OF SECTION 09 9123

SECTION 09 9600 - HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior epoxy paints - non-traffic surfaces.
B. High performance coatings for structural steel, steel joists, and metal decking, including exposed steel lintels.
C. High performance coatings in natatorium/pool environments.

1.02 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section
B. DFT: Dry film thickness, measured in mils.
C. WFT : Wet film thickness, measured in mils.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
C. ASTM D1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films; 2013.
D. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2012).
E. ASTM D4442 - Standard Test Methods fASTM D3359 or Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
F. ASTM D523 - Standard Test Method for Specular Gloss; 2014.
G. ASTM D3359 - Standard Test Methods For Rating Adhesion By Tape Test; current edition.
H. ASTM E96/E96M - Standard Test Methods of Water Vapor Transmission of Materials - 2016
I. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers; California Department of Public Health; v1.1, 2010.
J. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.
K. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.
L. SSPC-SP 1 - Solvent Cleaning; 2015.
M. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
N. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.04 SUBMITTALS

A. Refer to Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide product data for each coating product. Include complete list of products to be used with preparation and application instructions, and with the following information for each:
    1. Manufacturer's name, product name and/or catalog number, and general product category.
        a. Example of general product categories:
            1) Two component, waterbased, acrylic epoxy - Gloss Sheen.
            2) Interior primer for concrete masonry units.
    2. For each high-performance coating system and substrate, indicate which products are to be used.
        a. Examples:
            1) Interior Waterborne Acrylic Epoxy Paint for Concrete Masonry Units:

(a) Primer: Name of specific product provided.
(b) Finish Coats: Name of specific product provided.
2) Interior High Performance Coating For Structural Steel.
(a) Primer: Name of specific product provided.
(b) Intermediate Coat: Name of specific product provided.
(c) Top Coat: Name of specific product provided.
b. Use same designations indicated on Drawings and Schedules.

C. Samples: Submit 3 samples, 8-1/2 by 11 inches in size, illustrating each color and sheen specified.
1. High-performance coating color submittals will not be considered until color submittals for major materials not to be painted, such as masonry and storefront finishes, have been approved.
2. Existing high-performance coatings in the Natatorium for each type of coating system and in each color and gloss of topcoat indicated:
a. Submit Samples on aluminum Q-panel backing, 3” x 6”.
b. Step coats on Samples to show each coat required for system.
c. Label each Sample for location and application area.

D. Manufacturer's Qualification Statement.

E. Installer's Qualification Statement.

F. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, and color samples of each color and finish used.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Materials: 1 gallon of each color, sheen, and type; from the same product run.
3. Label each container with color, type, and finish in addition to the manufacturer's label.

H. Field Quality Control Reports.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum 5 years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years documented experience.

1.06 ADHESION TEST

A. Adhesion Test to be performed per ASTM D3359 Method A (5mils or less) or B (over 5mils)

B. Test to be completed after primer has been installed but before finish coats.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements0, for general requirements for mock-up.

B. Mock-ups shall demonstrate aesthetic effects and set quality standards for materials and execution.
1. Approval of mockups does not constitute approval of deviations from the Contract Documents unless Architect specifically approves such deviations in writing.

C. Provide a mock-up for each high-performance coating system, substrate, color and sheen as follows:
1. Vertical and Horizontal Surfaces: Provide mockup samples of at least 100 sq. ft.
2. Doors and Frames: Provide mock-up samples of one complete door and frame.
3. Railings and Other Lineal Materials: Provide mock-up samples of at least 8 lineal feet.

D. Locate where directed by Architect.

E. Mock-ups may remain as part of work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
C. Container Label: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
D. Coating Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.
E. Maintain containers in clean condition, free of foreign materials and residue.
F. Remove rags and waste from storage areas daily.

1.09 FIELD CONDITIONS

A. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the coating product manufacturer.
C. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.
D. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.
E. Comply with governing codes and regulations for paint products being used.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide high-performance coating products from same manufacturer, unless otherwise specified. For each high performance coating system, provide one of the indicated products for each coating within the system.
    1. Exceptions shall be permitted, provided approval of Architect is obtained using specified procedures for substitutions.
B. High Performance Coating Manufacturers.
    1. Benjamin Moore: Benjamin Moore & Co.: www:benjaminmoore.com.
    2. PPG: PPG Industries, Inc., Architectural Coatings: www.ppgpaints.com.
    3. Sherwin-Williams: The Sherwin-Williams Company: www:sherwin-williams.com.
    4. Tnemec: Tnemec Company Inc.: www.tnemec.com.
    5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 HIGH-PERFORMANCE COATINGS - GENERAL

A. Provide epoxy paints and high performance coatings where indictaed on Drawings; otherwise provide paints as specified in Sections 09 9113 - Exterior Painting and 09 9123 - Interior Painting.
B. Natatoriums:
    1. Provide epoxy paints and high performance coatings at natatorium/pool environments. This includes, but is not limited to, the following locations and substrates:
        a. Structural steel, steel joists, and metal decking.
        b. Concrete masonry units.
        c. Concrete where indicated on Drawings.
        d. Miscellaneous non-structural, ferrous metal and galvanized steel.
        e. Aluminum where indicated on Drawings.
C. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
D. Supply each coating material in quantity required to complete entire project's work from a single production run.

E. Do not reduce, thin, or dilute coatings or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
F. Volatile Organic Compound (VOC) Content and Emissions:
    1. Volatile Organic Compound (VOC) Content:
        a. Provide paints and finishes that comply with the most stringent requirements specified in the following:
            1) 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
            2) Architectural coatings VOC limits of State in which the project is located.
    2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
G. Sheen/Gloss Criteria.
    1. Product names are not acceptable as gloss level identification.
    2. Determine gloss value of paint finish by testing paint samples according to ASTM D523, using 60 degree geometry. Sheen/Gloss levels shall be defined as follows:
        a. Gloss Level 1: Flat/Matte, value between 0 and 5 units.
        b. Gloss Level 2: Velvet, value between 5 and 10 units.
        c. Gloss Level 3: Eggshell, value between 10 and 20 units.
        d. Gloss Level 4: Satin, value between 20 and 35 units.
        e. Gloss Level 5: Semigloss, value between 35 and 70 units.
        f. Gloss Level 6: Gloss, value between 70 and 85 units.
        g. Gloss Level 7: High Gloss, value more than 85 units.
    3. Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
H. Colors: To be selected from manufacturer's full range of available colors

2.03 INTERIOR EPOXY PAINTS - NON-TRAFFIC SURFACES

A. General:
    1. Excludes the following:
        a. Structural steel, steel joists, and metal decking.
        b. Exposed exterior steel lintels.
        c. Structural steel, steel joists, and metal decking in natatorium/pool environments.
        d. Concrete masonry units and concrete in natatorium/pool environments.
        e. Miscellaneous non-structural ferrous metal and galvanized steel in natatorium/pool environments .
B. Waterborne Acrylic Epoxy Paint - Non-Traffic Systems.
    1. Primers: For all sheens unless otherwise indicated.
        a. Primer for concrete; one coat.
            1) Benjamin Moore:
                (a) Semigloss and Eggshell Sheens: INSL-X Aqua Lock Plus 100 pct Acrylic Primer Sealer, AQ-0XXX; DFT 1.6 mils.
            2) PPG; Perma-Crete Interior/Exterior Alkali Resistant Primer, 4-603; DFT 1.5 mils.
            3) Sherwin Williams; Loxon Concrete and Masonry Prime/Sealer Interior/Exterior Latex, A24W8300 Series; DFT 2.5 mils.
        b. Primer for concrete masonry units; one coat.
            1) Benjamin Moore; Super Spec Masonry Interior/Exterior Hi-Build Block Filler, 206; DFT 9.0 mils.
            2) PPG; Speedhide Interior/Exterior Masonry Hi Fill Latex Block Filler, 6-15; DFT 7.0 mils.
            3) Sherwin Williams:
                (a) Semigloss and Eggshell Sheens: Loxon Block Surfacer A24W00200; DFT 2.5 mils.
        c. Primer for ferrous metal and galvanized steel; one coat.

1) Benjamin Moore; Corotech Acrylic Metal Primer, V110; DFT 2.0 mils.
2) PPG; Pitt-Tech Int./Ext. DTM Industrial Primer, 90-712 Series; DFT 3.0 mils.
3) Sherwin Williams; Pro Industrial Pro-Cryl Universal Primer, B66W310 Series; DFT 3.0 mils.

d. Primer for gypsum board; one coat.
1) Benjamin Moore; Fresh Start Natura Zero VOC Primer, 511; DFT 1.2 mils.
2) PPG; Pure Performance Interior Latex Primer - 9-900; DFT 1.4 mils.
3) Sherwin Williams; ProMar 200 Zero VOC Interior Latex Primer, B28W02600; DFT 1.0 mils.

e. Primer for previously painted surfaces; one coat.
1) Benjamin Moore; Fresh Start High-Hiding All Purpose Primer, 046; DFT 1.4 mils.
2) PPG; Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921 Series; DFT 1.6 mils.
3) Sherwin Williams; PrepRite ProBlock Interior/Exterior Latex Primer/Sealer, B51-600 Series; DFT 1.4 mils.

f. Primer for insulated piping and insulated ductwork; one coat.
1) Benjamin Moore; Fresh Start High-Hiding All Purpose Primer, 046; DFT 1.4 mils.
2) PPG; Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921 Series; DFT 1.6 mils.
3) Sherwin Williams; PrepRite ProBlock Interior/Exterior Latex Primer/Sealer, B51-600 Series; DFT 1.4 mils.

2. Semigloss Sheen: One component, pre-catalyzed, waterbased, acrylic epoxy.
a. Finish coats for all surfaces; two coats.
1) Benjamin Moore; Corotech Pre-Catalyzed Waterborne Epoxy Semi-Gloss, V341; DFT 1.5 mils
2) PPG; Pitt-Glaze WB1 Interior Semi-Gloss Pre-Catalyzed Water-Borne Acrylic Epoxy, 16-510 Series; DFT 2.0 mils.
3) Sherwin Williams; Pro Industrial Pre-Catalyzed Waterbased Epoxy, K46-150 Series, Semi-Gloss; DFT 1.5 mils.

2.04 HIGH PERFROMANCE COATINGS FOR STRUCTURAL STEEL, METAL DECKING, AND STEEL JOISTS

A. General:
1. Includes interior high performance coatings for the following:
a. Handrails and guardrails.
b. Structural steel, steel joists, and metal decking in natatorium/pool environments.
c. Miscellaneous non-structural, ferrous metal and galvanized steel in natatorium/pool environments.
d. Exposed steel lintels in natatorium/pool environments.

B. Steel Coating Systems.
1. Primer; one coat.
a. Zinc-rich primer.
1) Locations:
(a) Natatorium/pool environments.
(b) Wet areas.
(c) Galvanized steel.
(d) Other areas as indicated.
2) Primer:
(a) Benjamin Moore; Corotech Organic Zinc Rich Primer, V170; DFT 2.0 mils.
(b) PPG; Aquapon 97-670 Series; DFT 4.0 mils.
(c) Sherwin Williams; Protective and Marine Coatings Zinc Clad IV (85) Organic Zinc Rich Coating; DFT 4.0 mils.
(d) Tnemec; Tneme-Zinc Series 90-97; DFT 3.0 mils.
b. Epoxy primer.

1) Locations:
(a) Where zinc-rich primer is not required.
2) Primer:
(a) Benjamin Moore; Corotech Polyamide Epoxy Primer V150; DFT 2.5 mils.
(b) PPG; PMC Amercoat 278 High Solids, Zinc Phosphate Epoxy Primer and Buildcoat; DFT 5.0 mils.
(c) Sherwin Williams; Protective and Marine Coatings Macropoxy 5000 Penetrating Epoxy Primer/Sealer, B58 Series; DFT 1.5 mils.
(d) Tnemec; Hi-Build Epoxoline Series 66; DFT 4.0 mils.

c. Primer at previously painted surfaces:
1) Benjamin Moore; Corotech Polyamide Epoxy Primer V150; DFT 2.5 mils.
2) PPG; PMC Amercoat 278 High Solids, Zinc Phosphate Epoxy Primer and Buildcoat; DFT 5.0 mils.
3) Sherwin Williams; Protective and Marine Coatings Macropoxy 5000 Penetrating Epoxy Primer/Sealer, B58 Series; DFT 1.5 mils.
4) Tnemec; Hi-Build Epoxoline Series 66; DFT 4.0 mils.

2. Intermediate Coat; one coat, polyamide epoxy.
a. Benjamin Moore; Corotech Surface Tolerant Epoxy Mastic Coating, V160; DFT 6.0 mils.
b. PPG; Pittguard 97-145 Series; DFT6.0 mils.
c. Sherwin Williams; Protective and Marine Coatings Macropoxy 646 Fast Cure Epoxy; DFT 7.5 mils.
d. Tnemec; F.C. Typoxy Series 27; DFT 5.0 mils.

3. Top Coat; one coat, semi-gloss sheen, aliphatic acrylic polyurethane.
a. Benjamin Moore; Corotech Aliphatic Acrylic Urethane Semi-Gloss, V510; DFT 2.5 mils.
b. PPG; Pitthane 95-8800 Series; DFT4.0 mils.
c. Sherwin Williams; HI-Solid Polyurethane 250, Semi-Gloss; DF 5.0 mils.
d. Tnemec; Endura-Shield Series 73; DFT 4.0 mils.

2.05 HIGH PERFORMANCE COATINGS IN NATATORIUMS

A. Structural steel, steel joists, and metal decking, including exposed steel lintels:
1. Refer to "High Performance Coatings For Structural Steel, Metal Decking, and Steel Joists" Article above.

B. Existing structural steel, steel joists, and metal decking, including exposed steel lintels:
1. Basis of Design: Tnemec Company, Inc., 6800 Corporate Drive, Kansas City, MO 64120.
a. Product Distribution and Technical Representation:
1) Redox Coating Consultants, LLC (800) 890-7580 redox@tnemec.com
b. Substitutions: Not Permitted.
2. Primer:
a. Tnemec; Tneme-Zinc Series 90-97; DFT 3.0 mils 133 Protuff Aluminum, Formulation Description: Phenalkamide Aluminum Epoxy Mastic.
3. Intermediate Coat:
a. HP Acrylic Intermediate Coat, Acrylic, Hydorphobic
1) Tnemec Series 115 Uni-Bond DF
2) Formulation Description: Self-Crosslinking Hydrophobic Acrylic
4. Top Coat:
a. HP Acrylic Finish Coat, Acrylic, Hydrophobic
1) Tnemec Series 115 Uni-Bond DF
2) Formulation Description: Self-Crosslinking Hydrophobic Acrylic

C. Concrete Masonry Units and Concrete:
1. Primer:
a. Primer for concrete masonry units; one coat.

1) Benjamin Moore; Corotech, Waterborne Epoxy Block Filler, V163; DFT 10.0 mils.
2) PPG; Cementitious Waterproofing Block Filler, 95-217; DFT 12.5 mils.
3) Sherwin Williams: Protective and Marine Coatings, Kem Cati-Coat HS Epoxy Filler/Sealer, B42 Series; DFT 15.0 mils.
4) Tnemec; Envriofill Series 130; Coverage rate 70 sq. ft. per gallon.

b. Primer for concrete; one coat.
1) Benjamin Moore: Corotech 100 pct Solids Epoxy Pre-Primer V155; DFT 2.5 mils.
2) PPG; HPC High Gloss Epoxy 95-501 Series; DFT 4.0 mils.
3) Sherwin Williams; Pro Industrial High Performance Epoxy, B67 Series; DFT 6.0 mils.
4) Tnemec; Surfacing Epoxy, Series 215; DFT 3.0 mils.

c. Primer for previously painted surfaces; one coat.
1) Benjamin Moore: Corotech 100 pct Solids Epoxy Pre-Primer V155; DFT 2.5 mils.
2) PPG; HPC High Gloss Epoxy 95-501 Series; DFT 4.0 mils.
3) Sherwin Williams; Pro Industrial High Performance Epoxy, B67 Series; DFT 6.0 mils.
4) Tnemec; Surfacing Epoxy, Series 215; DFT 3.0 mils.

2. Intermediate Coat; one coat.
a. Benjamin Moore; Corotech Surface Tolerant Epoxy Mastic Coating, V160; DFT 6.0 mils.
b. PPG; Aquapon 97-130 Series; DFT5.0 mils.
c. Sherwin Williams; Protective and Marine Coatings Macropoxy 646 Fast Cure Epoxy; DFT 7.5 mils.
d. Tnemec; Hi-Build Epoxoline II Series L69; DFT 5.0 mils.

3. Top Coat; one coat.
a. Benjamin Moore; Corotech Aliphatic Acrylic Urethane Semi-Gloss, V510; DFT 2.5 mils.
b. PPG; Pitthane 95-8800 Series; DFT4.0 mils.
c. Sherwin Williams; Protective and Marine Coatings Acrolon 218 HS Acrylic Polyurethane, Semi-gloss; DFT 5.0 mils.
d. Tnemec; Enviro-Glaze Series 297; DFT 3.0 mils.

D. Miscellaneous Non-Structural, Ferrous Metal and Galvanized Steel:
1. Primers:
a. Zinc-rich primer.
1) Locations:
(a) Galvanized steel.
(b) Other areas as indicated.
2) Primer:
(a) Benjamin Moore; Corotech Organic Zinc Rich Primer, V170; DFT 2.0 mils.
(b) PPG; Aquapon 97-670 Series; DFT 4.0 mils.
(c) Sherwin Williams; Protective and Marine Coatings Zinc Clad IV (85) Organic Zinc Rich Coating; DFT 4.0 mils.
(d) Tnemec; Tneme-Zinc Series 90-97; DFT 3.0 mils.

b. Epoxy Primer; one coat.
1) Locations:
(a) Where zinc-rich primer is not required.
2) Primer:
(a) Benjamin Moore: Corotech Polyamide Epoxy Primer V150; DFT 2.5 mils.
(b) PPG; PMC Amercoat 278 High Solids, Zinc Phosphate Epoxy Primer and Buildcoat; DFT 5.0 mils.

(c) Sherwin Williams; Protective and Marine Coatings Macropoxy 5000 Penetrating Epoxy Primer/Sealer, B58 Series; DFT 1.5 mils.
(d) Tnemec; Hi-Build Epoxoline Series 66; DFT 4.0 mils..

c. Primer for previously painted surfaces: one coat.
1) Benjamin Moore: Corotech Polyamide Epoxy Primer V150; DFT 2.5 mils.
2) PPG; PMC Amercoat 278 High Solids, Zinc Phosphate Epoxy Primer and Buildcoat; DFT 5.0 mils.
3) Sherwin Williams; Protective and Marine Coatings Macropoxy 5000 Penetrating Epoxy Primer/Sealer, B58 Series; DFT 1.5 mils.
4) Tnemec; Hi-Build Epoxoline Series 66; DFT 4.0 mils..

2. Intermediate Coat; one coat.
a. Benjamin Moore; Corotech Surface Tolerant Epoxy Mastic Coating, V160; DFT 6.0 mils.
b. PPG; Aquapon 97-130 Series; DFT5.0 mils.
c. Sherwin Williams; Protective and Marine Coatings Macropoxy 646 Fast Cure Epoxy; DFT 7.5 mils.
d. Tnemec; F.C. Typoxy Series 27; DFT 5.0 mils.

3. Top Coat; one coat.
a. Benjamin Moore; Corotech Aliphatic Acrylic Urethane Semi-Gloss, V510; DFT 2.5 mils.
b. PPG; Pitthane 95-8800 Series; DFT4.0 mils.
c. Sherwin Williams; Protective and Marine Coatings Acrolon 218 HS Acrylic Polyurethane, Semi-gloss; DFT 5.0 mils.
d. Tnemec; Endura-Shield Series 73; DFT 4.0 mils..

2.06 ACCESSORY MATERIALS

A. Accessory Materials: Provide sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of high-performance coated surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of high performance coatings until substrates have been properly prepared.
B. Verify that surfaces are ready to receive work as instructed by product manufacturer.
C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
D. Test shop-applied primer for compatibility with subsequent cover materials; report incompatible primer conditions and submit recommended changes for Architect's approval.
1. Do not proceed with remedial action or change without receiving written authorization from Architect.
E. Measure moisture content of surfaces using electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below following maximums:
1. Interior Materials:
a. Gypsum Wallboard: 12 percent.
b. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
2. Report unacceptable conditions and submit recommended remedial action for Architect's approval.
a. Do not proceed with remedial action or change without receiving written authorization from Architect.
F. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

A. General:

1. Clean surfaces thoroughly and correct defects prior to application.
2. Prepare surfaces using the methods recommended by the top coat manufacturer for achieving the best result for the substrate under the project conditions.
3. Remove or repair existing paints or finishes that exhibit surface defects.
4. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
   a. After work is completed, reinstall removed items.
5. Seal surfaces that might cause bleed through or staining of topcoat.
6. Remove mildew from impervious surfaces by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
7. Adhesion Test to be performed per ASTM D3359 Method A (5mils or less) or B (over 5mils) of primer. Adhesion test to be performed on primer.

B. Concrete - Non-Traffic Surfaces:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Clean concrete according to ASTM D4258. Allow to dry.

C. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.

D. Gypsum Board:
   1. Interior:
      a. Fill minor defects with filler compound; make smooth and flush with adjacent surfaces.
      b. Spot prime defects after repair.

E. Ferrous Metal - Non-galvanized:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
      a. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning." Protect from corrosion until coated.

F. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Remove loose paint and other debris according to SSPC-SP 2.

G. Previously Painted Existing Surfaces:
   1. Remove all loose paint, dust, dirt, mold, mildew, oil, grease, rust, loose mill scale, mortar, and any other surface contamination.
   2. Scrape all loose, blistered, peeling, scratched or otherwise imperfect paint down to bare substrate and sand adjacent tightly adhering paint to feather edge.
      a. Tightly adhered existing paint may remain unless primer manufacturer recommends removal.
   3. Test for proper primer adhesion, as defined by the primer manufacturer, prior to proceeding with application of high performance coatings.
      a. Notify Architect of improper adhesion results; do not proceed with work until additional instructions are received from Architect.
   4. Spot prime all bare areas with appropriate primer before re-priming entire surface.

H. Existing Steel in Natatorium

1. Steel Substrates: Remove rust, loose mill scale, and disbanded or incompatible shop primer if any. Clean using methods recommended in writing by paint manufacturer, but not less than the following:
   a. SSPC-SP WJ-4/NACE WJ-4 Light Cleaning by use of Low Pressure Water Cleaning (LP WC) between 3,500 and 5,000 psi using a 0 degree rotating nozzle used in conjunction with either Holdtite 102 or Chlor*Rid.
   b. If all visible contaminates, loose mill scale, loose rust and other corrosion products, and loose paint have not been removed, SSPC-SP2 Hand Tool Cleaning or SSPC-SP3 Power Tool Cleaning should be employed until the surface cleanliness definition is met.

3.03 APPLICATION - HIGH PERFORMANCE COATINGS

A. Apply products in accordance with manufacturer's written instructions.
B. Provide smooth, opaque coatings of uniform finish, color, appearance, and coverage without brush marks, runs, sags, laps, ropiness, holidays, spotting, cloudiness, or other surface imperfections.
C. Terminate high performance coatings in neat lines.
D. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
E. Apply high performance coatings to properly prepared surfaces.
   1. Do not apply coatings over dirt, rust, scale, grease, moisture, or other conditions detrimental to application of coatings
F. Primers:
   1. Apply first coat of primer to surfaces as soon as practical after preparation and before subsequent surface deterioration.
   2. Re-prime shop-primed surfaces.
G. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
H. Provide completed work matching approved samples for color, sheen, texture, coverage and quality of work.
   1. Remove, refinish, or reapply work not complying with requirements.
I. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
J. Use applicators and methods best suited for substrate and type of material being applied and according to manufacturer's instructions.
   1. Brush Application: Use brushes best suited for type of material applied; use brush of appropriate size for surface or item being painted; produce results free of visible brush marks.
   2. Roller Application: Use rollers of fiber type and nap length as recommended by manufacturer for material and texture required.
   3. Spray Application: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
K. Number of Coats: Each high performance coatings system specifies a number of coats. This is the minimum number required.
   1. If undercoats, stains, or other imperfections are visible after final coat of high performance coatings is applied, apply additional coats until high performance coating is of uniform finish, color, and appearance without defects or imperfections.
L. Minimum Coating Thickness: Provide dry film thickness for each coat as indicated, but not less than that recommended by the coating manufacturer.

1. Number of coats and film thicknesses required are same regardless of application method.
2. Ensure edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent to that of flat surfaces.

3.04 SURFACES TO BE PAINTED

A. Refer to Section 09 9123 - Interior Painting for interior items.

3.05 SURFACES NOT TO BE PAINTED

A. Refer to Section 09 9123 - Interior Painting for interior items.

3.06 IDENTIFICATION AND COLOR CODING

A. Refer to Section 09 9100 - Painting.

3.07 FIELD QUALITY CONTROL

A. Owner may provide field inspection.

B. Adhesion Test to be performed per ASTM D3359 Method A (5mils or less) or B (over 5mils)

C. All high performance coatings shall be inspected as follows:
   1. Coatings shall be rejected for the following:
      a. Lacking minimum dry film thicknesses.
         1) Inspector may test for proper dry film thickness using methods as recommended by the inspector.
      b. Poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, and corners.
      c. Damage from touching, or disturbing paint in any other manner, before sufficiently dry.
      d. Damage from application to moist surfaces or damage caused by inadequate protection from the weather.
      e. Damage or contamination of paint from blown contaminants including but not limited to dust.
   2. Coatings shall be rejected if any of the following are evident under natural lighting for exterior surfaces and final lighting source, including daylighting, for interior surfaces:
      a. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 48 inches.
      b. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 48 inches.
      c. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles from a distance of not less than 48 inches.

D. Visible defects are defined as follows:
   1. Brush and roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
   2. When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.

E. Coatings rejected by the inspection shall be repaired or replaced at the expense of the Contractor.
   1. Small affected areas shall be touched up.
   2. Large affected areas shall be repainted.
   3. Small and large areas shall be as defined by the Architect.
   4. Areas without sufficient dry film thickness shall be repainted.
   5. Paint runs and sags shall be removed by scraper or sanding and repainted.

3.08 CLEANING

A. At end of each workday, remove empty cans, rags, and other discarded paint materials from site.
   1. Collect waste material which may constitute fire hazard, place in closed metal containers, and remove daily from site.

2. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

3.09 PROTECTION

A. Protect other work, whether being painted or not, against damage from high performance painting activities.
   1. Correct damage by cleaning, repairing, replacing as approved by Architect
B. Protect finishes until completion of project.
C. Touch-up damaged finishes after Substantial Completion.

END OF SECTION 09 9600

SECTION 10 2113.17 - PHENOLIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Phenolic toilet compartments.
B. Urinal screens.

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
B. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.
C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
D. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with placement of support framing and anchors in walls and ceilings.
   2. Coordinate the work with floor drain locations.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on panel construction, hardware, and accessories.
C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall and floor supports, door swings.
   1. Indicate reinforcement locations for partition-mounted grab bars and surface-mounted toilet accessories.
   2. Show floor drain locations.
D. Samples:
   1. Submit 3 samples of partition panels, 6 by 6 inch in size illustrating panel finish, color, and sheen.
   2. Submit 3 sample sets of hardware and accessories indicating material and finish; each set to include door latch, hinge, and panel bracket.
E. Selection Samples: Where colors and finishes are not specified, submit 3 sets of color and finish selection charts or chips.
F. Test Reports: Show compliance to specified surface burning characteristics requirements.
G. Maintenance Data: Include data on regular cleaning.
H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Door Hinges: Quantity equal to 2 percent of total installed, but not less than 4; including fasteners.
   3. Door Latch, Strike, and Keeper: Quantity equal to 2 percent of total installed, but not less than 4; including fasteners.
   4. Door Bumper: Quantity equal to 2 percent of total installed, but not less than 4; including fasteners.
   5. Door Pull: Quantity equal to 2 percent of total installed, but not less than 2; including fasteners.
   6. Fasteners: Quantity equal to 2 percent of each fastener type and size installed, but not less than 10 fasteners of each type and size.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years of documented experience.
B. Installer Qualifications: Company experienced in installing the products specified in this section with minimum 5 years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package partition panels and material as required to prevent damage before installation.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide 10 year warranty against defects in workmanship and materials, including delamination, breakage, and corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Phenolic Toilet Compartments:

1. Accurate Partitions Corp., an ASI Group company: www.accuratepartitions.com.
2. All American Metal Corp - AAMCO: www.allamericanmetal.com.
3. Bobrick Washroom Equipment, Inc.: www.products.bobrick.com.
4. Bradley Corporation: www.bradleycorp.com.
5. Flush Metal Partitions, LLC: www.flushmetal.com.
6. General Partitions Mfg. Corp: www.generalpartitions.com.
7. Global Partitions Corp., an ASI Group company: www.globalpartitions.com.
8. Knickerbocker Partition Corp.: www.knickerbockerpartition.com.
9. Substitutions: Section 01 6000 - Product Requirements.

2.02 PHENOLIC TOILET COMPARTMENTS

A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid phenolic core panels with integral melamine finish, floor-mounted headrail-braced.

1. Accessibility: Comply with ICC A117.1 and ADA Standards.
2. Surface Burning Characteristics:
   a. Class B per ASTM E84; flame spread 75, maximum, and smoke developed 450, maximum.
3. Color: Two standard colors as selected by Architect.

B. Doors:

1. Thickness: 3/4 inch.
2. Width: 24 inch, unless otherwise indicated.
3. Width for Handicapped Use: 36 inch, out-swinging, unless otherwise indicated.
4. Height: 58 inch.

C. Panels:

1. Thickness: 1/2 inch.
2. Height: 58 inch.
3. Widths: As indicated.

D. Pilasters:

1. Thickness: 3/4 inch.
2. Width: As required to fit space; minimum 3 inch.

E. Urinal Screens: Wall mounted with continuous panel brackets.

1. Construction: Same as panels.
2. Width: 24 inches, unless otherwise indicated.
3. Height: 42 inches, unless otherwise indicated.

2.03 ACCESSORIES

A. Pilaster Shoes: Formed ASTM A666 Type 304 stainless steel with No. 4 finish, 3 inch high, concealing floor fastenings.

1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.

B. Head Rails: Hollow stainless steel, 1 inch by 1-1/2 inch size, with anti-grip profile and cast socket wall brackets.

C. Wall, Pilaster, and Urinal Screen Brackets: Satin stainless steel; continuous type.

D. Attachments, Screws, and Bolts: Stainless steel , tamper proof type.

1. For attaching panels and pilasters to brackets: Through-bolts and nuts ; tamper proof.

E. Hardware: Satin stainless steel; heavy-duty type.
1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
2. Door Latch: Slide type with exterior emergency access feature.
3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
4. Coat hook with rubber bumper; one per compartment, mounted on door.
5. Provide door pull for outswinging doors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.
B. Verify correct spacing of and between plumbing fixtures.
C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.
C. Align tops of doors and panels.
D. Attach panel brackets securely to walls using anchor devices.
E. Wall fasteners shall be located at masonry and tile joints; do not penetrate masonry or tile faces.
F. Align wall brackets and pilaster brackets.
G. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
H. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.
B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
C. Adjust adjacent components for consistency of line or plane.

END OF SECTION 10 2113.17

SECTION 10 2800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet, shower, and bath accessories.
B. Electric hand dryers.
C. Electric hair dryers.

1.02 ABBREVIATIONS AND ACRONYMS

A. CFCI: Contractor to Furnish, Contractor to Install.
B. OFCI: Owner to Furnish, Contractor to Install.

1.03 REFERENCE STANDARDS

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2022.
B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.
D. ASTM B86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings; 2023.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
C. Samples: When requested by Architect.
    1. Submit 3 sample for each color and finish, 2 by 2 inch in size.
D. Selection Samples: Where colors and finishes are not specified, submit 3 sets of color and finish selection charts or chips.
E. Operation and Maintenance Data: Include operating procedures and recommended cleaning methods.
F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
    1. See Section 01 6000 - Product Requirements, for additional provisions.
    2. Hand Dryer Filters: For units with filters, provide quantity equal to 2 filters per unit installed. .

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years of documented experience.
B. Installer Qualifications: Company experienced in installing the products specified in this section with minimum 5 years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package toilet, bath, and laundry accessories as required to prevent damage before installation.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Mirrors: Provide 15 year warranty against silver spoilage.
C. Electric Hand Dryers: Provide 5 year warranty against defects in workmanship and materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design:
   1. Commercial Toilet, Shower, and Bath Accessories: Provide product indicated or a comparable product by one of the following:
      a. American Specialties, Inc, (ASI): www.americanspecialties.com.
      b. Bobrick Washroom Equipment, Inc.: www.bobrick.com.
      c. Bradley Corporation: www.bradleycorp.com.
      d. Substitutions: Section 01 6000 - Product Requirements.
   2. Electric Hand Dryers: Provide product indicated or a comparable product by one of the following:
      a. American Specialties, Inc, (ASI): www.americanspecialties.com.
      b. Bobrick Washroom Equipment, Inc.: www.bobrick.com.
      c. Bradley Corporation: www.bradleycorp.com.
      d. World Dryer Corp.: www.worlddryer.com.
      e. Substitutions: Section 01 6000 - Product Requirements.
   3. Electric Hair Dryers: Provide product indicated or a comparable product by one of the following:
      a. American Specialties, Inc, (ASI): www.americanspecialties.com.
      b. Bobrick Washroom Equipment, Inc.: www.bobrick.com.
      c. Bradley Corporation: www.bradleycorp.com.
      d. Excel Dryer Inc.: www.exceldryer.com.
      e. Substitutions: Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
B. Keys: Provide 2 keys for each accessory to Owner; master key lockable accessories.
C. Stainless Steel Sheet: ASTM A666/A666M, Type 304.
D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
F. Zinc Alloy: Die cast, ASTM B86.
G. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

2.04 ELECTRIC HAND DRYERS

A. Electric Hand Dryers: High Speed, high performance hand dryer, with downward fixed nozzle.
   1. Operation: Automatic, sensor-operated on and off.
   2. Mounting: Surface mounted.
   3. Cover: Cast iron with white porcelain enamel finish.
      a. Tamper-resistant screw attachment of cover to mounting plate.
      b. Screened or shielded air intake.
      c. Screen or shield to prevent access to motor/heater.
   4. Air Flow: 60 CFM, minimum.
   5. Air Velocity: 16,000 linear feet per minute, minimum, at full power.
   6. Fan/Heater Control: Field adjustable fan speed and heater on/off selection.
   7. Noise: 75dB, maximum, 72 inches from unit; with hands under nozzle.
   8. Total Wattage: 1000 W, maximum.

9. Runtime: Field adjustable, from approximately 10 seconds to approximately 35 seconds.
10. Supply Voltage: 240 V, single phase, 60 Hz, nominal, unless otherwise indicated.
11. Warranty: 5 years.
12. Basis-of-Design Product:Excel Dryer, Inc. Xlerator Model XL-SB: www.exceldryer.comProvide the basis-of-design product or one of the following:
    a. American Specialties, Inc, (ASI) ; Model 0199: www.americanspecialties.com.
    b. Bobrick Washroom Equipment, Inc.; B-7125: www.bobrick.com.
    c. Bradley Corporation ; Model 2923: www.bradleycorp.com.
    d. Substitutions: Section 01 6000 - Product Requirements

2.05 ELECTRIC HAIR DRYERS

A. Electric Hair Dryers: Traditional fan-in-case type, with downward directional nozzle.
1. Operation: Automatic, sensor-operated on and off.
2. Mounting: Surface
3. Cover: cast iron / stamped steel
    a. Tamper-resistant screw attachment of cover to mounting plate.
    b. Screened or shielded air intake.
    c. Screen or shield to prevent access to motor/heater.
4. Finish: Epoxy coating: White
5. Air Flow: 200 CFM, minimum.
6. Air Velocity: 7,000 linear feet per minute, maximum.
7. Total Wattage: 2300 W, maximum.
8. Runtime: 60 to 90 seconds, maximum.
9. Nozzle Orientation: Able to rotate 360 degrees.
10. Basis-of-Design Product: World Dryer Corp.; World Airstyle Model B.
    a. Substitutions: Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.
B. Verify exact location of accessories for installation.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
B. Install plumb and level, securely and rigidly anchored to substrate.
C. Mounting Heights: As indicated and as required by accessibility regulations.
D. Where possible, locate wall fasteners at masonry and tile joints; do not penetrate masonry or tile faces.

3.03 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION 10 2800

SECTION 10 5129 - PHENOLIC LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Phenolic lockers.

1.02 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's published data on locker construction, sizes and accessories.
C. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.
D. Samples: Submit two samples 3 by 6 inches in size, of each color scheduled.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect locker finish and adjacent surfaces from damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Phenolic Lockers:
   1. Summit Lockers, Inc: www.summitlockers.com/#sle.
   2. Carvart; www.carvart.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 LOCKER APPLICATIONS

A. L-1 Student Lockers: Phenolic lockers, recessed mounted.
   1. Width: 15 inches.
   2. Depth: 15 inches.
   3. Height: 60 inches.
   4. Locker Configuration: Four tier.
   5. Fittings: Size and configuration as indicated on drawings.
      a. Hooks: Two double prong.
   6. Locking: Padlock hasps, for padlocks provided by Owner.
      a. Built-in Digital keypad locks at locations noted on drawings.
B. L-2 Student Lockers: Phenolic lockers, recessed mounted.
   1. Width: 15 inches.
   2. Depth: 15 inches.
   3. Height: 30 inches.
   4. Locker Configuration: Two tier.
   5. Fittings: Size and configuration as indicated on drawings.
      a. Hooks: Two double prong.
   6. Locking: Padlock hasps, for padlocks provided by Owner.

2.03 PHENOLIC LOCKERS

A. Lockers: Factory assembled, made of phenolic core panels with mortise and tenon joints and stainless steel mechanical joint fasteners; fully finished inside and out; each locker capable of standing alone.
   1. Doors: Full overlay, covering full width and height of locker body; square edges.
   2. Panel Core Exposed at Edges: Machine polished, without chips or tool marks; square edge unless otherwise indicated.
   3. Where locker ends or sides are exposed, finish the same as fronts or provide extra panels to match fronts.
   4. Door Color: As selected by Architect; allow for 2 different colors.
   5. Body Color: Manufacturer's standard white or light color.
   6. Fasteners for Accessories and Locking Mechanisms: Tamperproof type.

B. Component Thicknesses:
   1. Doors: 1/2 inch minimum thickness.
   2. Locker Body: One of the following combinations:
C. Phenolic Core Panels: Nonporous phenolic resin and paper core formed under high pressure, with natural colored finished edges, integral melamine surface, matte finish, and uniform surface appearance; glued laminated panels not acceptable.
   1. Surface Burning Characteristics: Flame spread index of 75 or less, and smoke developed index of 450 or less; when tested in accordance with ASTM E84.
D. Coat Hooks: Stainless steel or reinforced nylon; attached with tamperproof screws.
E. Number Plates: Manufacturer's standard, minimum 4-digit, permanently attached with adhesive; may be field installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared bases are in correct position and configuration.
B. Verify bases and embedded anchors are properly sized.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Place and secure on prepared base.
C. Install lockers plumb and square.
D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 pounds.
E. Bolt adjoining locker units together to provide rigid installation.
F. Install end panels and filler panels.
G. Install accessories.
H. Replace components that do not operate smoothly.

3.03 CLEANING

A. Clean locker interiors and exterior surfaces.

END OF SECTION 10 5129

SECTION 13 1100 - SWIMMING POOLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT and applicable parts of DIVISION 1 - GENERAL REQUIREMENTS, as listed in the Table of Contents, be included in, and made a part of this Section.

1.02 SUMMARY OF WORK *(for general guidance-not inclusive*)

A. Introduction

1. Provide labor, materials, equipment, and services necessary to renovate the pool and spa. This work must include the structure(s) and installation of pool finishes as well as products listed in Part 2 of Section 131100.

B. Work included in this section:

1. It is the intent of this section to place the entire responsibility for the renovation of the pool and spa under one vested Contractor. Under this section the Contractor will provide but is not necessarily limited to the following:

a. Provide equipment and services required for erection and delivery onto the premises the equipment or apparatus provided. Remove equipment from premises when no longer required.

b. Provide electrical conduit, wiring, junction boxes etc. to low voltage pool equipment within pool filter/chemical rooms per Division 26 - Electrical. (Low voltage is considered less than 110 V.)

c. Coordinate for required bonding and grounding of the pool shell, fittings, and equipment.

d. Provide necessary piping and valving as shown on the drawings and specified herein.

e. Provide a marcite plaster cementitious finish in the pool with a slip resistant surface. Provide specialty tile for the resurfacing markers.

f. Provide fully assembled cleaning and maintenance equipment for the pool(s) as specified herein.

g. Provide for the storage of pool related equipment, materials, and systems. Items are the responsibility of the Contractor until accepted by the owner.

h. Obtain final acceptance by jurisdictional health department(s).

i. Start, test, calibrate and adjust mechanical equipment, electrical equipment, recirculation, chemical, and other supplied systems including deck, loose, maintenance, and safety equipment. Instruct the Owner's representative in the systems operation and maintenance as described herein.

C. Related work specified in other sections:

1. Section 131104 – Swimming Pool Cementitious Finish

2. Section 131105 – Selective Demolition

3. The following work related to the swimming pools must be completed by other trades.

a. Provide, erect, and maintain necessary barricades, signs, lights, and flares for pool construction to protect workers and the public.

b. Prior to concrete pours, verify electrical bonding of the pool embedded items. Coordinate and arrange required electrical, plumbing and or building inspections that must be performed on embedded items. Reference Division 26 - Electrical.

c. Provide sanitary sewer and storm drain connections. Reference Division 22 - Plumbing.

D. Related work specified in Plumbing section. Reference Division 22 - Plumbing. Work that must be completed by others.

1. Provide water service to the auto-fill bypass to air gap above fill funnel. Install the slow closing solenoid valve in the bypass auto-fill piping.

2. Provide water meter on the fresh water supply line upstream of the manual fill valve and the install the slow closing solenoid valve.

E. Related work specified in Mechanical section. Reference Division 23 – HVAC. Work that must be completed by others.

1. Provide air recirculation systems for pool related spaces.

F. Related work specified in Electrical sections. Reference Division 26 – Electrical. Work that must be completed by others.

1. Ground and bond pool structures, fittings, and equipment in accordance with Article 680 of the N.E.C. Test and verify that the system electrical ground is true and solid. Provide certification to this effort.

2. Obtain permits, inspections, and approvals of wiring including grounding and bonding of metal components associated with the pool in accordance with Local, State and National Electrical Codes.

3. Confirm electrical conduits that penetrate the pool shell are watertight and installed per N.E.C. Article 680.

1.03 QUALITY ASSURANCE

A. The specifications and drawings illustrate and detail one (1) swimming pool system utilized for competitive use. Certain technical aspects of the design are common only to pool systems planned for public use. Understanding these aspects, their functions and interaction through experience is vital to completing a successful operating system. It is a mandatory requirement that the Contractor have achieved such experience as a prerequisite for bidding on this project.

1. The Swimming Pool Contractor to refer to section 002113 – Instructions to Bidders for bonding requirements.

2. The Swimming Pool Contractor must include a bid bond from an approved surety company registered in the State of Michigan certifying that the Swimming Pool Contractor has adequate bonding capacity to provide a bid for this project. The Swimming Pool Contractor must submit a copy of the bid bond for review prior to the Swimming Pool Contractor’s selection.

3. If the Contractor has not received prior written approval for this project or has not been included in the pre-approved list of Contractors, they must submit a list of projects meeting the aforementioned qualifications, including contact information of the General Contractor must be submitted for review and approval at least 10 days prior to bidding of the project. The Contractor must have completed at least five (5) public-use pools with individual water surface areas in excess of 12,000 square feet within the past 10 years.

4. The Contractor must submit prior to the start of construction the name of the on-site Project Superintendent including their relevant experience. The Contractor’s on-site Project Superintendent must have completed at least three (3) public-use pools with individual water

surface areas in excess of 12,000 square feet within the past 10 years. A list of projects meeting the aforementioned qualifications, including contact information of the General Contractor as well as Owner must be included with the experience submittal. Project Superintendent on the project cannot change unless written authorization has been provided by the Architect and Owner.

5. The Owner reserves the right to reject a bid if the evidence submitted by, or investigation of, the Contractor fails to satisfy the Owner that the Contractor is properly qualified to carry out the obligation of the contract and to complete the work described or if the Contractor does not have the qualifications stated herein. Subject to compliance with item 2 above on this specification.

6. The following Contractors have been pre-approved. The Contractor must meet the requirements listed above.

Acapulco Pools
Francine Gall
1550 Victoria St. N.
Kitchener, Ontario N2B3EZ
Phone: 519.743.6357

Aquatic Source
Nick Shelton
190 Summit Street
Brighton, MI 48116
Phone: 248-921-1340

Baruzzini
Tony Baruzzini
1281 S. Old US Hwy 23
Brighton, MI 48114
Phone: 810.229.8996

B & B Pools
Dane Frederiksen
31071 Industrial
Livonia, MI 48150
Phone: 734.427.3242

Buddenbaum & Moore
Bill Buddenbaum
PO Box 990
Noblesville, IN 46062
Phone: 317.214.7443

Capri Pools
Dave Wiecher
124 Point West Blvd
St. Charles, MO 63301
Phone: 314.351.6020

Helm Group
Gary Statdfield
2279 East Yellow Creek Road
Freeport, IL 61032
Phone: 815.235.1955

High Tech Pools
Frank Duale
31330 Industrial Pkwy
North Olmstead, OH 44070
Phone: 440.979.5070

Spear
Sam Blake
12966 N County Road 50W
Roachdale, IN 46172
Phone: 765.522.1126

1.04 REGULATORY AGENCY REQUIREMENTS AND ENGINEERING SERVICES

A. The system must comply with necessary pre-construction approvals.

B. Give necessary notices, obtain permits, and pay government fees, and other costs in connection with his work, including the filing of necessary as-built drawings, prepare documents (including any amendments to the approved construction documents) and obtain necessary approvals of governmental departments having jurisdiction over their work. Obtain required certificates of inspection for his work and deliver copies to the Owner and Architect before requesting acceptance and final payment for the work.

C. Include in the work, without extra cost to the Owner, labor, materials, services, apparatus, or drawings in order to comply with applicable laws, ordinances, rules, and regulations, whether or not shown on drawings and/or specified.

1.05 COORDINATION AND CLARIFICATION

A. Coordinate with other trades' work relating to this section.

B. Must establish with other trades, having related work in this section, that work necessary to complete the pool(s) as shown on the drawings and in the specifications is included in the base bid and alternates to the Owner.

C. If in doubt regarding the responsibility for work covered in this section and/or discovery of errors or omissions in the bidding documents, notify the Architect through channels established by the specifications and request a clarification ten (10) days prior to the bid date.

1.06 ALTERNATES

A. Review the description of the alternates in Division 1 and on the drawings for possible effect upon work in this section. Alternates related to the work in this section are described in this division and on the bid proposal form.

B. Pool Alternates

1. Alternate #1: Floor and walls shallower than 5'-0" to receive all tile finish.

2. Alternate #2: Provide an electronic flocculation system as indicated in the drawings and specifications.

1.07 CONTRACTOR'S ALTERNATE PROPOSAL

A. Submit bid to the owner based on materials, equipment and methods as specified in this Section. No substitution of material will be allowed.

B. It is the intent of the contract documents to encourage competition. The base proposal must include the construction methods and equipment as specified and detailed. Proposed system substitutions must have prior written approval by the Architect.

C. If there is a deviation from the basis of design equipment, confirm that engineering criteria are appropriate for the substituted equipment.

D. Substitutions of specified construction methods and equipment must include a complete submittal as required by these specifications and drawings of appropriate scale incorporating required changes. Provide a list of at least ten (10) satisfactory installations comparable to this project that have been manufactured and installed under the manufacturer's current legal name. Submit a list of such projects with the name, address and current telephone number of the Owner's Operator and Architect of Record to the Architect on the bid date.

E. Changes or modifications to the Contract Documents that are not authorized by the architect are the sole responsibility of the Contractor.

1.08 SUBMITTALS

A. Submittals must be made in accordance with the requirements of Division 1 - General Requirements and in strict compliance with the following procedures and guidelines.

B. One (1) set of shop drawings and engineering data must be tabbed, indexed, and referenced to the specifications, compiled into an electronic submittal, and submitted in two stages. The first stage must include items for the pool shell(s), reference swimming pool structural specifications. The second stage must be for remaining items. Each section of items must be prefaced by a cover sheet listing the items submitted within the section. Electronic submittals must be organized, numbered,

and submitted in the same format and order as the project specifications. Only complete sets will be reviewed.

1. Engineering data covering systems, equipment, structures, and fabricated materials, which will become a permanent part of the work under this contract, must be submitted for review. This data must include drawings and descriptive information in sufficient detail and scale to show the kind, size, arrangement, and operation of component materials and devices; the external connections, anchorage and supports required; performance characteristics; fabrication and dimensions needed for installation and correlation with other materials and equipment. A certification, in writing, must be provided indicating that equipment will fit in the space allotted and as shown on the drawings.

2. Submittals regardless of origin must be stamped with the approval of the Contractor and identified with the name and number of this contract, Contractor's name, and references to applicable specification paragraphs and contract drawings. Each submittal must indicate the intended use of the item in the work. When catalog pages are submitted, applicable items must be clearly identified. The current revision, issue number, and date must be indicated on drawings and other descriptive data.

3. The submittals will not be accepted from anyone but the Contractor. Submittals must be consecutively numbered in direct sequence of submittal and without division by subcontracts or trades.

4. The Contractor's stamp of approval is a representation that the Contractor accepts full responsibility for determining and verifying quantities, dimensions, field construction criteria, materials, catalog numbers and similar data, and that he has reviewed or coordinated each submittal with the requirements of the work and the contract documents.

5. Each submittal must include a statement prepared by the originator of the drawings and data, certifying compliance with the contract documents except for deviations, which are specifically identified.

6. Deviations from the contract documents must be identified on each submittal and must be tabulated in the Contractor's letter of transmittal. Such submittals must, as pertinent to the deviation, indicate essential details of changes by the Contractor (including modifications to other facilities that may be a result of the deviation) and required piping and wiring diagrams.

7. The Contractor must accept full responsibility for the completeness of each submission, and, in the case of a resubmission, must verify that exceptions previously noted have been considered.

8. The need for more than one resubmission, or a delay in obtaining review of submittals, will not entitle the Contractor to an extension of the contract time unless the delay of the work is directly caused by a change in the work authorized by a change order.

9. Review of drawings and data submitted by Contractor will cover only general conformity to the drawings and specifications, external connections and dimensions that affect the layout. Review does not indicate a thorough review of dimensions, quantities, and details of the material, equipment, device, or item shown. Review of submittals does not relieve Contractor from responsibility for errors, omissions, or deviations, or responsibility for compliance with the contract documents.

10. When the drawings and data are returned marked REJECTED, REVISE AND RESUBMIT or SUBMIT SPECIFIED ITEM, the corrections must be made as noted thereon and as instructed and six corrected copies (or one copy and one corrected reproducible copy) resubmitted.

11. Resubmittals must bear the number of the first submittal followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal. Resubmittals must be indexed, tabbed, referenced to the specifications, and bound in a three-ring binder and submitted at one time.

12. When corrected copies are resubmitted, the Contractor must, in writing, direct specific attention to revisions and must list separately revisions made other than those called for on previous submissions.

13. When the drawings and data are returned marked NO EXCEPTIONS TAKEN or MAKE CORRECTIONS NOTED, no additional copies are to be provided unless specifically requested to do so for record.

C. Permits, Receipts and Test Reports

1. Provide the Architect with copies of permits and receipts for fee payments.

2. Submit a sample format for each test report intended for use. Submit test reports required herein only on approved forms.

D. Include complete product data indexed, tabbed, and referenced to specifications with 8 ½" x 11" cover sheet covering:

1. Paragraph 2.01 - Filtration Equipment

2. Paragraph 2.02 - Piping Systems

3. Paragraph 2.03 - Chemical Treatment Systems

4. Paragraph 2.04 - Flow Meters

5. Paragraph 2.05 - Water Level Controllers

6. Paragraph 2.06 - Deck Equipment

7. Paragraph 2.07 - Swimming Pool Finishes

8. Paragraph 2.08 - Sealants

9. Paragraph 2.09 - Movable Bulkhead

E. Include engineering construction drawings for pool piping.

F. Include separate submittal for all color selections required to be made by the Owner/Architect. Physical samples and/or mock ups must be provided as requested and submitted for review. The following items must be included:

1. Bulkhead Grating

2. Pool Lift

3. Swimming Pool Cementitious Finish – Reference Section 131104

4. Swimming Pool Tile

5. Sealants

6. Spa Cover

G. Reference Section 131104 - Swimming Pool Cementitious Finish

H. Reference Section 131105 - Selective Demolition

1.09 TESTING REPORTS

A. Provide all testing reports as described in the specifications. Testing report(s) and any additional documentation of the test(s) must be submitted to the Architect within seven (7) days of the commencement of the test(s) unless otherwise noted. The following testing report(s) must be submitted for review/record:

1. The pool piping must be capped and hydrostatically pressure tested prior to backfilling. Hydrostatic pressure tests must be performed by the Contractor and witnessed by the Owner, or a representative designated by the Owner.
2. The domestic water must be analyzed prior to filling the pool(s) after the application of the plaster finish. The Contractor must provide a domestic water analysis by a water testing agency to determine types and quantities of chemicals required to ensure calcium-balanced water immediately upon the completion of filling the pool(s). Refer to specification 131104.
3. The slump of the plaster finish must be tested should a plastering machine be used. The Contractor to perform slump test to ensure slump does not exceed 2.5” when tested using a 2" by 4" by 6" high slump cone. Refer to specification 131104.

1.10 OPERATION AND MAINTENANCE MANUALS AND CLOSE-OUT SUBMITTALS

A. Detailed operation and maintenance information must be supplied for equipment requiring maintenance or other attention. The equipment supplier and/or the Contractor must prepare an operation and maintenance manual for equipment. Parts lists and operating, and maintenance instructions must be provided.

B. Each operation and maintenance manual must include the following:

1. Equipment function and calibration, normal operating characteristics, and limiting conditions.
2. Assembly, installation, alignment, adjustment and checking instructions.
3. Operating instructions for startup, routine and normal operation, regulation, and control, shut down and emergency conditions.
4. One (1) copy of instructional videos.
5. One (1) copy of Safety Data Sheet forms for all pool chemicals provided.
6. Operating cycles must be specifically described in outline format and in referenced detail. A wall-mounted color-coded piping flow diagram must be provided in the pool equipment room. The diagram must be engraved on laminated plastic with color-coded piping to match the color of coding on piping, and including valves identified with number on tags. The minimum size is 11-inch x 17 inch.
7. Include manufacturer recommended maintenance schedule, parts lists, piping diagram (to agree with wall mounted diagram) and trouble-shooting information for pool mechanical equipment.
8. Using reference to keyed valves and wall diagram, include specific written instructions for procedures that must be followed for the following:
    a. Emptying and refilling the pool including de-watering during the period that the pool will be empty.
    b. Water level control adjustment and chemical control operation.
    c. Filter operation and backwashing; and
    d. Super chlorination.
9. Lubrication and maintenance instructions.
10. Guide to “troubleshooting.”
11. Parts list and predicted life of parts subject to wear.
12. Outline, cross section, and assembly drawings; engineering data and wiring diagrams.
13. Test data and performance curves, where applicable.

14. Specific written instructions for procedure for emptying and refilling the pool(s) including de-watering during the period that the pool will be empty. Provide a yellow warning sign 8-1/2 in. x 11 in., that must be mounted in the pool mechanical room, that reads:

    WARNING
    Prior to emptying Pool
    Consult O & M Manuals for Procedures

    Add another sign that reads:

    Keep Caps, Plugs and Tops Tight Fitting to Prevent Escape of Fumes.

15. Additionally, provide the following signs mounted on the chemical room doors:
    a. NFPA Hazard Diamond for each chemical stored in room.
    b. Warning: Authorized Personnel Only Beyond This Point
    c. Signage indicating location of associated Safety Data Sheet forms for all chemicals stored in room.
16. One set of applicable submittals must be included in each manual.

C. The operation and maintenance manuals must be in addition to instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by the Contractor.

D. Manuals and other data must be printed on heavy, first quality paper, 8-1/2 x 11-inch size with standard 3-hole punching and inserted in plastic covers. Drawings and diagrams must be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practical, larger drawings must be folded separately and placed in envelopes that are bound into the manuals. Each envelope must bear suitable identification on the outside.

E. Six (6) bound volumes of each manual must be submitted. Parts lists and information must be assembled in substantial manuals and permanent, three-ring or three-post binders. Material must be assembled and bound in the same order as specified, and each volume must have a table of contents and suitable index tabs.

F. Material must be marked with project identification. Non-applicable information must be marked out or deleted.

G. Shipment of equipment will not be considered complete until the required manuals and data have been received.

H. The Contractor must provide, assemble, and inventory all deck, loose, safety, and maintenance equipment including any loose mechanical equipment prior to the Owner taking possession of the pool(s). The Contractor must provide a checklist that has been signed by the Owner verifying receipt of all items listed in Part 2 - Products.

1.11 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material in manufacturer's original, unopened containers and crates with labels intact and legible.

B. Deliver materials in sufficient time and quantity to allow continuity of work and compliance with approved construction schedule.

C. Handle materials in a manner to prevent damage.

D. Store materials on clean raised platforms with weather protective coverings. Provide continuous protection of materials against damage or deterioration.

E. Remove damaged materials from site.

1.12 WARRANTIES

A. The Contractor warrants to the Owner and Architect that materials and equipment provided under the contract will be of good quality and new unless otherwise required or permitted by the contract documents, that the work will be free from defects not inherent in the quality required or permitted, and that the work will conform with the requirements of the contract documents. Work not conforming to these requirements, including substitutions not properly approved and authorized will be considered defective. The Contractor's warranty will exclude remedies for damage or defect caused by abuse, improper or insufficient maintenance, improper operations, modifications not executed by the Contractor or improper wear and tear under normal use. If required by the Architect, provide satisfactory evidence as to the kind and quality of materials and equipment.

B. The Contractor must agree to repair or replace defective or non-complying work at no cost to the Owner upon written notification from the Owner within the warranty period. Pro-rated warranties are not acceptable.

C. Warranties must be for a period of one year from the date of substantial completion or the owner begins using the pool unless otherwise specified. Submit warranties covering, but not limited to the following:

1. Defects in material, manufacture and installation of the filtration system, including controls for a period of one (1) year.
2. Defects in material, workmanship, and installation of the pool pumps for a period of one (1) year.
3. Manufacturer's minimum fifteen (15) year warranty on the filter tank and lining against defective materials or workmanship of the tank and components. (Additional warranty time may be purchased from the manufacturer.) Prorated warranties are not acceptable.
4. Defects in material, workmanship, and installation of the pool piping system and recirculation fittings for a period of three (3) years.
5. Manufacturer's minimum one (1) year warranty against defective materials, components, and workmanship in the sanitizing feed system.
6. Manufacturer's minimum one (1) year warranty against defective materials, components, and workmanship in the pH buffer feed system.
7. Manufacturer's minimum one (1) year warranty against defective materials, components, and workmanship in the ultraviolet sanitizing system (excluding the UV lamps, quartz, and seals). Medium pressure ultraviolet bulbs must be warranted for a period of 8,000 hours. Intermittently operated lamps (≥ 1 on/off cycle per day) will be replaced free of charge should failure occur prior to 4,000 hours and replacement will be prorated between 4,000 and 8,000 hours.
8. Alternate #2 - Manufacturer's minimum three (3) year warranty against defective materials, components, and workmanship in the Clear-Flow Electronic Flocculation System (EFS).
9. Manufacturer's minimum one (1) year warranty against defective materials, components, and workmanship in the pool water level control system.
10. Defects in material, workmanship, and installation of loose, deck, maintenance, and safety equipment including deck anchors for a minimum period of one (1) year.
11. Defects in material, workmanship, and installation of the pool cementitious finish against cracking and delamination for a period of three (3) years.
12. Alternate #1 - Defects in material, workmanship, and installation of the tile finish against cracking and delamination for a period of five (5) years.

13. Manufacturer's minimum fifteen (15) year systems warranty against defective materials, components and workmanship in the pool tile setting materials.

14. Manufacturer's minimum three (3) year warranty against defective materials, components, and workmanship in the movable bulkhead.

1.13 SYSTEM TRAINING

A. A qualified representative of the Contractor performing work under this section must put the equipment into operation and instruct the Owner's representatives in the operation of this equipment to the Owner's satisfaction immediately after project's substantial completion.

B. The Contractor's training representative must have completed the equipment/system's manufacturer's training requirements and be certified, by the manufacturer, to provide and teach system training.

C. The representative from the Contractor must be either a CPO (Certified Pool Operator) or have an AFO (Aquatic Facility Operator) certification.

D. Training periods to consist of 32 hours of on-site training and scheduled as follows:

1. 8 hours of initial training on the complete swimming pool system. The 8 hours of initial training must be comprised of at least 2 hours of training on water chemistry analysis and adjustment. The water chemistry training will include in-depth review of the use of the Langlier index and its computation.

2. The initial 8 hours of training must include information on the care, operation, adjustment, and maintenance of items provided by the Contractor under the "Part 2 – Products" section of this specification.

3. 8 hours of training after the Owner's staff has had experience operating the system. This time may be requested after the pool has been placed in operation within a period of one (1) year from the time the pool was accepted by the Owner. The additional training must contain at least 2 hours of review of water chemistry.

4. Provide a project specific video recording instruction manual in addition to the training sessions. The video instructions must be project specific and must include information on the care, operation, adjustment, and maintenance of items provided by the Contractor under the "Part 2 – Products" section of this specification. This video recording must be done separate from the Owner training.

5. The Contractor must include one (1) copy of video recording instructions in each Operations and Maintenance Manual.

1.14 POOL FILL WATER QUALITY

A. The Owner is to bear the cost of the water required for one (1) complete fillings of the pool. Removal of iron or copper (if in excess of .3 ppm) will be required for the final fill to avoid staining of the pool finish. Subsequent fillings or partial fillings (more than 25%) of the pool is by the Contractor, at its own expense.

B. Provide the necessary plant equipment so that the temperature of fill water will be within plus or minus 10 degrees of the ambient air and/or the pool structure at the time of filling. Extreme caution is urged if the temperature variance is greater than 10-degree F.

C. Provide the necessary chemicals and to adjust and balance the water chemistry in the pools to the following levels:

pH	7.4 - 7.6
Calcium Hardness	200 - 400 PPM
Total Alkalinity	60 - 80 PPM

Langelier saturation index	-0.3 - +0.3
Total Dissolved Solids (TDS)	not to exceed 1,500 PPM

1.15 RECORD DRAWINGS

A. Provide a complete set of record drawings of the entire pool system(s) including sub-systems. Record drawings must be prepared in accordance with the requirements of Section 017839 and must be a complete, stand-alone set. The Contractor is permitted to obtain original documents and copy them for this purpose only. Provide a digital record set (latest version of AutoCAD or compatible software).

PART 2 - PRODUCTS

2.01 FILTRATION EQUIPMENT

A. The filter system must consist of high-rate pressure sand filter tanks as shown on the drawings. Every aspect and component of the filter system must be certified by the National Sanitation Foundation (NSF) and bear the certification mark. The filter must have an engraved metal data plate permanently affixed on the face of the system that describes operational data and instructions and indicates startup date.

B. It is the intent of these specifications to describe a filtration system complete in every respect with accessory items and supplied and warranted by one manufacturer.

C. Horizontally Oriented Fiberglass Tanks

1. The filter tanks must be horizontally oriented single cell fiberglass tanks, minimum 42 inches in diameter. The filter system must be listed as approved by the National Sanitation Foundation prior to bid date.

    a. Basis of Design: Fiberglass filters must be the product of Stark/Pentair, Waterco, or Neptune Benson provided they meet the specifications and layout. System design is based upon Stark/Pentair. Valves must be provided to backwash one filter at a time.

2. Filter tanks must incorporate components and features as described in this section.

3. Two (2) saddle style bases must be provided for tank support. Systems that incorporate stacked tanks must include similar bases and mounting saddles for the upper vessel. Tank supports and connections must be seismic rated to support the filter tanks for the appropriate seismic zone where the project is located. Access to the tank must be provided by a 14" x 18" manhole with two (2) curved yokes. Manhole seal must be complete with a one-piece 1/4" neoprene gasket and positioned so that internal pressure from the filter will augment the seal. No additional hardware or through bolts will be allowed.

4. Each filter tank must be equipped with the necessary flanges and connections for the internal and external piping. Connections must be comprised of fiberglass flanges and schedule 80 PVC flanges.

5. Tank connections 2 inches and smaller must be 150 lb. Type 316L stainless-steel threaded full couplings. Tank connections 3 inches and larger must be heavy steel bosses drilled and tapped on both sides to receive standard flanged fittings or Sch. 40 Type 316L stainless-steel nipples.

6. The discharge from the automatic air release valve must be hard piped to waste. Each filter tank must have a means of releasing air. Each coupling or orifice must be provided with a slotted PVC sand retainer or stainless-steel strainer. An automatic air release system must be provided for each tank.

7. The drain system must consist of a 3/4-inch 316L stainless-steel coupling mounted at the lowest point in the bottom head. This drain must be valved and piped to the nearest floor drain or backwash pit.

8. Filter Piping - Internal

   a. The lower internal distribution system must be a horizontal header/lateral arrangement. The header must be Schedule 80 PVC construction, capped on one end and flanged or threaded at the other end for field connection. Lateral connections must be spaced no more than 6 inches on centers and must be 1-1/2-inch FPT connections. Attachments to header must be solvent welded and thermo-welded to ensure integrity of connection.

   b. Under drain system must be factory installed and constructed of extra heavy Schedule 80 high impact PVC. Multiple PVC main headers must be tapped and threaded to receive laterals.

   c. Laterals must consist of 1-1/2-inch Schedule 80 PVC pipe with openings as required. Each lateral must be fabricated complete with socket cap on one end and male adapter on the other end. Both fittings must be solvent welded to the slotted pipe. Laterals must be designed and sized at the factory, so they are installed in the field and over the entire cross sections area of the filter.

   d. The upper distributor must consist of PVC piping Schedule 80 and/or deflector plate per manufacturer standard design.

   e. Each filter must be supplied with a pressure equalizing upper internal distribution system consisting of a horizontal header/lateral arrangement. The header piping must be constructed of Schedule 80 PVC. The header/lateral piping and connections must be designed and sized to provide uniform distribution and unrestricted flow during the filtration and backwash cycles.

   f. Upper laterals must be constructed of Schedule 80 PVC pipe with machine slotted openings or orifices. Machined slots or orifices must be clean, de-burred and free of obstructions that would not permit the free flow of water through the opening. Details of the lateral attachment to the header must be submitted for review and approval.

   g. The lower and upper distribution systems must be properly supported and anchored. Hardware in wetted areas must be Type 316L stainless-steel or non-metallic. Tank interiors must be inspected prior to the media being placed in the filters.

9. External Piping and Backwash Valves

   a. Valves to initiate the backwash cycle shall be diaphragm type valves actuated hydraulically using water. Valves shall be constructed of non-corrosive materials such as ABS plastic. All metal components (shaft and fasteners) shall be Type 316 Stainless Steel. Diaphragm shall be scrim reinforced EPDM with polyurethane sideport seals. 6” Backwash Valves shall include a transparent ABS valve housing and cover to readily display valve positioning and provide convenient maintenance inspections. Cast iron and other metal valves are not acceptable.

   b. The system, including external piping, shall be fully solvent-welded and assembled on templates at the factory and shipped for ease of installation at the job site.

   c. For multiple-tank systems, each tank in system shall be capable of being backwashed individually using filtered water from the remaining tanks. The common method of backwashing by using raw source water in a reverse flow through the filter or filters will not be acceptable.

   d. The influent, effluent and waste manifolds shall be constructed of schedule 80 PVC piping and fittings. Each tank in the system will consist of one three-way

hydraulically operated diaphragm valve per tank to direct the flow of water during the backwash cycle. For vessels with 6" connections, "Clear" three-way hydraulically operated diaphragm valves shall be provided. One (1) sight glass will be installed in the waste line.

e. Each filter system shall include a Motorized Priority Valve provided on the effluent manifold for the purpose of ensuring ample clean filtered water during the backwash process. Valves shall be butterfly type actuated electrically. Valve body and disc shall be constructed of non-corrosive PVC plastic. Shaft shall be Type 316 Stainless Steel. Seals shall be EPDM. Valve size shall exactly match the return pipe size for the common header that services all tanks in the system as shown on the plans. Actuators feature light weight enclosure with powder coating for durability and chemical resistance. Actuators shall run on 120 vac, 60 htz., and include two (2) internally mounted limit switches for precise locations for filter and backwash settings.

10. Automatic Programmable Backwash Control

a. The filter manifold piping must be designed to allow for one (1) filter tank to backwash at a time while the recirculation system is operating. An automatic backwashing system must be provided with the filter system.

b. Fully Automatic Backwashing System

1) Each filter system shall include a Backwash Controller having an Underwriters Laboratory (UL) listing. Backwash controller shall control all aspects of the backwash cycle of up to six (6) filter vessels via STARK backwash valves. The unit shall be computerized and reprogrammable with a 20x4 character backlit display.

2) Controller shall be capable of initiating backwash for all vessels in the system in three ways: at the single touch of a button; by a signal from a CS400-DP differential pressure switch, and/or by manually turning the knob of the multiport distribution valve. Controller shall be capable of accepting either a dry-contact, 24 VDC or a 24 VAC backwash input signal.

3) The controller shall be capable of reprogramming for number of filters, time of each backwash, inter-filter delay, heater cool-down mode, and priority valve delay. The input power shall be 24-volt AC Class II Source (B4110). Controllers shall not be powered with more than 24-volts.

4) "Advance" feature: Controller shall include a push-button feature to allow the user to manually advance to the next process within the backwash cycle to save energy and conserve water. Processes that include the advance feature are: backwash duration, valve-shift duration, inter-filter delay, and priority valve delay.

5) Each filter system will include influent and effluent gauges mounted on a non-corrosive PVC panel. Gauges will range from 0-60 PSI, include quick connectors, and tubing.

6) The filter system will include a pressure regulator, gauge and include quick connectors with tubing mounted on a non-corrosive PVC panel. Pressure regulator will be of brass and pre-set at the factory to 40 PSI. Pressure gauge will range from 0-100 PSI and be color coded to denote proper operating range.

c. Water connection to backwash system and booster pump system

1) A 3/8" minimum protected water connection must be provided to the backwash controller. Coordinate with manufacturer.

2) A booster pump system (BPS) must be provided by the filter system manufacturer for the purpose of maintaining a consistent, adjustable water pressure for hydraulic actuation of the backwash control valves. The BPS must include a centrifugal pump, pressure sustaining tank, adjustable pressure switch, valves, required tubing / connectors and fittings and appurtenances for a complete and operable system.

11. Automatic Air Relief Valve

a. A 1” valve must be provided to automatically and continuously release air in the filter. The valve must be fabricated of plastic with Buna-N seals. A plumbing kit must be provided with two (2) PVC ball valves to allow manual air relief and isolation of the automatic valve. Valves fabricated of cast iron, bronze or stainless-steel valves will not be accepted.

12. Media (Glass)

a. Filter media must be recycled glass media as approved by the filter manufacturer. Glass media must have a uniformity coefficient of 1.69, bulk density of 80 lbs/ft^3 and have an effective size from 0.45 to 0.6 mm.

b. The bottom layer of support media must be placed by hand to avoid damage to the under-drain system and leveled before the addition of the upper layer of filter media.

c. Media must be delivered after approval by the manufacturer of the filter and stored in 40-pound bags.

d. The media must be NSF/ANSI 50 approved.

e. Media must be approved by the filter manufacturer prior to shipping.

2.02 PIPING SYSTEMS

A. General

1. Provide recirculating piping between the pool(s) and the pool mechanical room, fill funnel and all interconnecting piping to and from the chemical feed systems and chemical controller.

2. Provide necessary pipe supports and support systems required to support associated piping and valves.

3. Provide other tubing, conduit or piping associated with equipment specified herein. Coordinate with other trades.

B. Pipes

1. Pipe routing as shown and detailed on the contract drawings is diagrammatic only and is not intended to show minor details or exact locations of piping systems. Installation is required and must be adjusted to accommodate interference and adjustments anticipated and encountered. Pipe sizes on plans refer to the nominal inside diameter of the pipe.

2. PVC swimming pool piping must be NSF approved and conform to the requirements of ASTM D-1785.

3. PVC pipes must be the product of one manufacturer. Approved manufacturers of PVC piping are Eslon, Harvel, and Chemtrol or approved equal.

4. The swimming pool piping above and below the floor in the pool mechanical room must be Schedule 80 PVC.

5. Below grade swimming pool piping not located beneath the pool floor must be Schedule 80 PVC backfilled with native granular material free of ice, clay, debris, organic matter, and

rocks larger than 4" across their greatest dimension, and per recommendations indicated in the project geotechnical report.

6. The influent and effluent lines to the heat source unit must be CPVC. Connections between metallic piping and/or equipment and PVC must be flanged.

7. PVC and CPVC fittings must be the product of one manufacturer. Molded fittings must be manufactured by Ipex, Chemtrol, Harvel, Spears, and Lasco/Westlake or acceptable substitutes. Fabricated fittings must be manufactured by Harrison Machine, Spears, or an acceptable substitute.

8. Vertical sight sump piping must be NSF approved, Schedule 40 PVC. Horizontal sight sump piping must be NSF approved, Schedule 40 PVC that is perforated and wrapped with fabric and has 3/8” diameter holes located top and bottom on 4 inch or 6-inch centers. Horizontal sight sump piping must extend 1 foot minimum beyond the main drain.

9. Chemical feed lines from chemical feeders to recirculation piping must be Schedule 80 PVC piping. Piping must be hard piped into the recirculation piping via tee or saddle per the drawings. Required valves must be of PVC construction.

10. Splash collar for the fill funnel must be clear Schedule 80 PVC and manufactured from a Type I, Grade I PVC compound with a Cell Classification of 12454 per ASTM D1784. The pipe must be manufactured in compliance with ASTM D1785.

11. Flanged plumbing connection hardware must be stainless-steel.

12. Materials must be installed by workmen thoroughly skilled in their trades and work must present a neat and mechanical appearance when complete. At no additional expense to the Owner, replace or correct work not judged acceptable by the Architect, Engineer, or Owner’s representation.

13. Support hardware, brackets, fasteners, hangers, etc. furnished and installed in the surge tank must be 316L stainless-steel.

14. No installation allowed that will provide a cross-connection or interconnection between a distributing supply for drinking purposes and the swimming pool, or between the pool and a sanitary or storm water sewer system that will permit a backflow of water into the pool water system.

15. Piping must be hydrostatically (water) pressure tested for leaks before and after backfilling to guarantee water tightness. Pneumatic (air) pressure test is not allowed.

16. Provide water seals for watertight penetrations of concrete walls and floor slabs.

    a. Renovation:

        1) For wall penetrations with dry-side access (Mechanical Room/Pipe Tunnel), provide Link Seals with bolt head access from the dry side, Xypex Patch and Plug (on the wet side), Xypex Concentrate and Dry-Plug, and Xypex Megamix II or Non-Shrink Grout.

        2) For wall penetrations with no permanent dry-side access, provide Synkoflex FR Waterstop (trim as required), Xypex Patch and Plug, Xypex Concentrate and Dry-Plug, and Xypex Megamix II or Non-Shrink Grout.

17. Adhere to the applicable provisions in Division 22 - Plumbing, "General Provisions" and "Basic Materials and Methods" for installation of piping system.

18. Mechanical equipment must be connected into the recirculation piping system must be connected utilizing flanged or union connections.

19. Provisions must be made to purge pipes in the system.

20. Concentric reducers must be fiberglass by MerMade Filter, Inc., or equivalent reducers of schedule 80 PVC construction.

C. Pipe Hangers and Supports

1. Manufacturer

a. Subject to compliance with these specifications, pipe hanger and support systems must be manufactured by Cooper B-line (basis of design), Inc, TOLCO, and Anvil International or approved equal.

2. Hangers

a. Pipes 2 inches and smaller

1) Adjustable steel clevis hanger, B-Line models B3100 or B3104.

2) Adjustable steel swivel ring (band type) hanger, B-Line model B3170.

b. Pipes 2-1/2 inches and larger

1) Adjustable steel clevis hanger, B-Line model B3100.

2) Adjustable steel yoke pipe roll, B-Line model B3114.

3. Multiple or Trapeze Hangers

a. Trapeze hangers must be constructed from 12-gauge roll formed ASTM A1011 SS, Grade 33 structural steel channel, 1-5/8 by 1-5/8-inch minimum, B-Line B22 strut or stronger as required.

b. Mount pipes to trapeze with 2-piece pipe straps sized for outside diameter of pipe, B-Line B-2000 series.

4. Wall Supports

a. Pipes 2-1/2 inches and smaller

1) Steel offset “J” hook hanger, B-Line model B3600.

b. Pipes 3 inches and larger

1) Welded strut bracket and pipe straps, B-Line models B3064 and B2000 series.

2) Welded steel bracket B-Line model B3066 or B3067 with roller chair or adjustable steel yoke pipe roll. B-Line model B3120 or B3110.

5. Floor Supports

a. Electroplated carbon steel adjustable pipe saddle and nipple attached to steel base stand sized for pipe elevation. B-Line model B3092 and B3088T or B3090 and B8088. Pipe saddle must be screwed or welded to an appropriate base stand.

6. Vertical Supports

a. Steel riser clamp sized to outside diameter of pipe, B-Line model B3373.

7. Plastic Pipe Supports

a. V-Bottom clevis hangers with galvanized 18-gauge continuous support channel, B-Line models B3106 and B3106V, to form a continuous support system for plastic pipes smaller than 1 inch or flexible tubing.

b. A vented and sloped continuous PVC Schedule 40 pipe no smaller than 1-1/2 inch outside diameter will be used to route flexible tubing with the appropriate pipe supports.

8. Supplementary Structural Supports - Design and fabricate supports using structural quality steel bolted framing materials. Channels must be roll formed, 12-gauge ASTM A1011 SS Grade 33 steel, 1-5/8 inch or greater as required by loading conditions. Submit design for pipe tunnels, pipe galleries etc. for approval. Use clamps and fittings designed for use with the strut system.

D. Hanger Attachments

1. Upper Attachments

a. Beam Clamps

1) Beam clamps must be used where piping must be suspended from building steel. Clamp type must be selected on the basis of load supported and load configuration.

2) C-Clamps must be locknuts and cup point set screws similar to B-Line model B351L or B3036L. Top flange c-clamps must be used when attaching a hanger rod to the flange of structural steel, B-Line model B3034 or B3033 or approved equal. Refer to manufacturer's recommendations for set screw torque. Retaining straps must be used to maintain the clamp position on the beam where required.

3) Center load beam clamps must be used where specified. The steel clamps must be B-Line models B3050 or B3055. Forged steel beam clamps with cross bolt must be B-Line B3291-B3297 series or approved equal as required to fit beams.

b. Concrete Inserts

1) Cast in place spot concrete inserts must be used applicable, either steel or malleable iron body, B-line B2500 or B3014 or approved equal. Spot inserts must allow for lateral adjustment and have means for attachment to forms. Select inserts to suit threaded hanger rods sizes, B-line models N2500 or B3014N series.

2) Continuous concrete inserts must be used where applicable. Channels must be 12 gauge, ASTM A1011 Grade 33 structural quality carbon steel, complete with Styrofoam inserts and end caps with nail holes for attachment to forms. The continuous concrete insert must have a load rating of 2,000 lbs/ft. in concrete, B-Line models B22I, 32I, or 52I or approved equal. Select channel nuts suitable for strut and rod sizes.

E. Hanger Accessories

1. Hanger rods must be threaded on both ends or continuously threaded rods of circular cross section. Use adjustable lock nuts at upper attachments and hangers. No wire, chain, or perforated straps are allowed.

F. Hanger Finish

1. Indoor Finishes

a. Hangers must be zinc plated in accordance with ASTM B633 or must have an electro-deposited green epoxy finish.

b. Strut channels must be pre-galvanized in accordance with ASTM A653 SS Grade 33 G90 or must have an electro-deposited green epoxy finish.

c. Zinc Plated hardware is not acceptable for use in chemical rooms.

G. Valves

1. Valves 3 inches and larger must be butterfly type valves, with PVC body, 150# SWP with stainless-steel shaft, PVC or polypropylene disc and replaceable resilient seat bonded to a rigid shaft and guaranteed for bubble tight shutoff from 27-inch vacuum to 150 PSI. Extended neck 2 inches beyond flanges for insulated piping must be provided with handle for manual operation. Valve components must be suitable for swimming pool chlorinated water service. Butterfly valves must be Georg Fischer Type 567, Asahi/America Type SP Pool-Pro, Chemtrol Model-B, Simtech VP series, Colonial Valve 411 Series, or approved equal.
2. Valves smaller than 3 inches must be PVC true union ball valves, full port, three-piece construction, blowout-proof stem, Viton seal with socket end connectors.
3. Submerged valves up to 3 inches must be PVC true union ball valves. Submerged valves over 3 inches must be PVC bodied, wafer type, butterfly valves with stainless-steel handle extensions as required. Valves must be by approved manufacturers listed above. Submerged valves must be provided with stainless-steel connectors. The stem housing extensions must be properly supported and braced.
4. Butterfly type valves 8 inches and larger must be fitted with a watertight gear operator.
5. Valves located 7 feet or greater off the floor must be fitted with a chain operator.
6. Submerged valves, valves buried below grade, or valves not readily accessible, must be provided with a stainless-steel reach rod and handle.
7. Valve hardware must be 316L stainless-steel and meet ANSI hardware installation guidelines.

H. Pipe and Valve Identification

1. Exposed pool piping must be equipped with color coded flow directional arrows per local and state swimming pool health code. Verify that pool piping identification is in accordance with local and state health regulations.
2. Valves must be identified with minimum 1-1/2-inch diameter plastic laminate engraved tags with minimum 1/2-inch-high numbers. Tags must be fastened to valves with a nylon attachment (zip tie). Valves must be described as to their function and referenced in the operating instruction manual and wall mounted piping diagram that must be prepared.

2.03 CHEMICAL TREATMENT SYSTEMS

A. pH Buffering System (CO_2)

1. CO2 Alarm & Monitoring System
   a. Provide a CO_2 alarm and monitoring system in the locations shown on the drawings. The system must include a hi-res digital display and must allow for communication with four (4) CO_2 infrared sensors and eight (8) alarm units. Sensors and displays must have an ingress protection rating of IP55 and IP54 respectively. The system must be the AX60+ by Analox or approved equal. The system must be tied into the Building Management System through 4-20mA and Modbus RTU communication.

B. Ultraviolet Dechloramination and Disinfection System

1. Medium Pressure UV
   a. Ultraviolet Disinfection Equipment: Must operate within the UVC electromagnetic spectrum emitting wavelengths in the range of 200nm to 400nm. This required wavelength will provide constant disinfection/inactivation of bacteria, algae, molds, viruses, and destruction of Monochloramines, Trichloramines, and Dichloramines. Ultraviolet Lamp/Chamber and Spectra Touch Control Panel by Evoqua Technologies Ltd. or approved equal. Deviations/exceptions must be provided in writing to and approved by the designer prior to the bid date.

1) Ultraviolet disinfection equipment by Aquionics and Prominent are approved equals.

b. The UV System must have a MET or equivalent (ETL, CSA, or UL) listing, be NSF-50 2016 certified including Section 14.18 (crypto inactivation) and 3rd party validated to the USEPA UVDGM 2006 Guidelines.

1) Equipment General Description: The Ultraviolet System must be provided in a complete package to include a stainless-steel chamber, Spectra Control System located in NEMA 12 (IP52) rated panel, Medium Pressure Bulb(s) designed to emit wavelengths within the UVC electromagnetic spectrum, automatic wiper system, and Project Commissioning by a Certified Ultraviolet Technician.

c. Wafer (WF) Units: Ultraviolet manufacturer to offer unit capability of a horizontal OR vertical installation application using state of art design and direct flow through characteristics. Unit must be a medium pressure system with 94% UVT at the indicated design flow rate. Systems validated or designed for flows based on 98% UVT are not acceptable. Chamber and Control Cabinet must be as indicated on the drawings.

d. Ultraviolet Lamp

1) Ultraviolet lamp must be medium pressure high intensity. Lamp must be designed to emit continuous Ultraviolet wavelengths in the range of 200nm to 400nm. This will provide optimal disinfection benefits and destruction of the Monochloramine, Dichloramine, and Trichloramine compounds. The lamp(s) must remain unaffected by temperature variance of 0 degrees F (-17 C) to 200 degrees Fahrenheit (93 degrees Celsius).

2) The lamp system must provide a constant dose of not less than 60 mJ/cm2 until the end of the lamp life for indoor applications and not less than 40 mJ/cm2 for outdoor disinfection and this must be based on constantly monitoring the full recirculating flow rate, not on a side stream treatment. The system must be equipped with infinitely variable power control of the lamp intensity & dose. Power stepping not acceptable. The lamps must be capable of turndown to 30% of the nominal rated power.

3) The lamp must be connected via means of a plug connector and must have a mechanical interlock to prevent lamp removal when lit for safety reasons.

e. Ultraviolet Reactor

1) The unit must be constructed of 316L stainless-steel electropolished and passivated to prevent corrosion within the harsh pool environment.

2) The Ultraviolet chamber must come complete with the following equipment: Ultraviolet intensity monitor factory calibrated to provide intensity in mWcm2, monitors providing percentage of lamp output not acceptable. It must include a built-in alarm system to notify the operator when the output level drops below the required level of 60 mJ/cm2 for indoor pools or 40mJ/cm2 for outdoor pools (or operator set dosing levels).

3) UV Reactor will be a validated system with third party testing to a recognized international standard such as the USEPA DGM.

4) Ultraviolet temperature monitoring system must be provided to maintain system integrity in the event of flow interruptions to the chamber.

5) Ultraviolet chamber must come complete with annealed quartz sleeve with “O” ring seals for water tightness. The system must be complete with

advanced seal arrangement to reduce the risk of quartz over-compression on the seal face.

f. PVC Pipe UV Protection

1) If required by the manufacturer, where Schedule 80 PVC or other thermoplastic piping materials are installed upstream or downstream of the UV reactor, the UV system manufacturer must provide factory-engineered stainless-steel pipe shields to prevent long-term degradation to the adjacent piping connections caused by UV-C radiation.

2) Pipe shields must be installed immediately upstream and downstream of the reactor in the region where reflected and refracted UV energy is most concentrated.

3) Pipe shields must insert directly into standard PVC pipe or fittings, match the nominal pipe diameter, and must not require extended straight pipe runs or changes in piping material.

4) Field-applied coatings, reliance on distance alone, or substitution of alternate piping materials must not be considered acceptable alternatives.

g. Automatic Wiper System

1) An automatic cleaning system must be provided for cleaning of quartz sleeve and Ultraviolet monitor probe. The system must travel the entire length of the quartz sleeve twice per desired cleaning cycle. Precision molded wiper rings must be provided to ensure thorough quartz tube cleaning and quartz tube protection. The wiper cycle must be user selectable and adjustable within a range of 5 minutes to 24 hours depending on anticipated application and deposit build-up.

2) The wiper system must have the following characteristics:

a) The system must utilize direct drive with square faced coupling and acme threaded shaft to prevent slippage and pin shearing. Systems utilizing shear pins or complicated gear boxes will be unacceptable.

b) The wiper power supply must be 24-volt DC for improved safety. Higher voltage not acceptable.

c) System must incorporate Direct Shaft Encoding for positional location. Systems relying on external limit switches or internally located magnets will be unacceptable.

d) The wiper interval must be operator selectable with optional override switch.

e) Wiper faults must be indicated on the control system display.

f) Wiper System to utilize “Intelligent Operation” for automatic start-up commissioning.

3) Records wiper position at chamber ends. Position must be fixed and not dependent on a timed interval or component striking end of chamber.

4) Establish a travel run without using limit switches to ensure system integrity and longevity.

h. UV Strainer

1) The UV system must be provided with a downstream strainer to protect against the possibility of lamp/quartz breakage traveling downstream.

2) Pressure gauges must be provided on each side of the strainer. Gauges must be liquid filled, 316L stainless-steel bourdon tube type with a minimum 2-1/2-inch diameter dial, high impact polypropylene or stainless-steel case, corrosion resistant white scale with black divisions and numerals, 300 Series stainless-steel heavy duty rotary bushed movement, black enameled balanced Micrometer pointer. Pressure ranges must be calibrated in psig (0-60 psi). Basis of Design: Gauges must be manufactured by Weksler Instrument Corporation or approved equal.

3) A stainless-steel filter type pressure snubber must be provided for each pressure gauge consisting of a 3/8-inch diameter by 1/8-inch-thick micro metallic stainless-steel filter and placed in the line just before the pressure gauge. Provide isolation brass valves or brass gauge cocks at each gauge for easy replacement and maintenance.

i. Ultraviolet Control System

1) The control cabinet must be a SPECTRA control unit and or pre-approved equal.

2) The power must be controllable to provide full power, half power and infinite variable power based on real time interface with changes in UVT, Flow Rate or Combined Chloramines. The power panel must house the electronic ballasts required to ignite and power the lamps.

3) Three levels of operation must be provided to meet the needs of the operator and pool environment: Simple Control (start, stop and reset), Full Parameter Display, and Customized Operator Configuration.

4) Modes of operation must be password protected to secure system critical setup functions. Touch Control system must have clearly identifiable start, stop, and reset icons (suitable for gloved operation) with Running and Fault LCD indicators.

5) The display must include the following:

a) Ultraviolet calculated dose

b) Ultraviolet intensity (as a percentage and mW/cm^2)

c) Lamp Current

d) Flow rate (as gallons per minute or m^3/hour)

e) Chamber Temperature

f) Operation hour meter

g) Fault indicators to include Lamp fault, low UV & temperature alarm, ground fault trip, wiper fault.

h) Alarm functions must have a simple text message display to assist in fault finding.

j. Ultraviolet Control System Interface

1) The Control system must have a minimum of the following system interface control:

a) Remote operation

b) Process interrupt features (from valves & flow meters)

c) Low UV dose

d) Flow meter input.

e) Auto-Restrike.

f) Half to full power UV setting with 24 hour/7-day settable timer.

g) Variable power/Dose pacing interface

2) Control system must have built in data-logging capabilities to record the following information:

a) UV intensity required.

b) UV intensity measured.

c) Lamp current

d) Chamber Temperature

e) Flow Rate

f) Time and date stamp, every alarm generated.

k. Manufacturers must maintain spare or replacement parts in the USA for the same day or not longer than next day delivery in North America.

C. Electronic Flocculation System

1. The Clear-Flow Electronic Flocculation system must be provided and installed on the recirculation piping for the swimming pool. The Clear-Flow system must be a non-chemical water treatment system designed to operate as an electronic flocculant in recreational water systems. When implemented into the system, the Clear-Flow system must work to agglomerate both organic and mineral particulate resulting in filtration enhancement on all types of filtration systems. This filtration enhancement must allow for a reduction in backwashing frequency - saving water, chemicals, and energy.

2. The Clear-Flow system must be UL listed and certified to NSF/ANSI Standard 50 and documentation of such certification must be provided by the manufacturer with each system.

3. When used in a recreational water application, the Clear-Flow system must work as an electronic flocculant. By generating and propagating a low-frequency treatment signal throughout the entire plumbing system, the technology must produce an ongoing flocculation effect which will aid in a reduction in turbidity and improved clarity.

4. The Clear-Flow system’s ongoing flocculation effect must enhance filtration efficiency. The flocculation effect must create larger particles allowing for a reduction in both frequency and duration of backwashing.

5. Equipment

a. The following components are contained in a standard Clear-Flow kit and must be provided for each system:

1) ABS or SS enclosure with 3 glands (2 for signal leads and 1 for power supply)

2) Signal cables complete with mounting tags (Temp. rating -40°F to +140°F) (Qty. 2)

3) Stainless steel hose clamps (Qty. 4)

4) Gland plug (Qty. 1)

5) 2A / 250 VAC UL-listed slow blow fuse (Qty. 1)

6) 4mm Allen wrench (for grub screw) (Qty. 1)

6. Clear-Flow electronic flocculation system models must be the following:

a. For 12 pipes: Model # CF-1200

7. Power Requirements:
   a. Input Voltage: 100–240 VAC
   b. Input Frequency: 50 - 60 Hz
   c. Power Rating: 5.4W
   d. Internal Fuse Rating: 2A / 250VAC UL-Listed slow-blow
   e. Temperature Range: -40°F to +140°F
   f. The electrical supply must be properly grounded, or the system will not work. Hard wiring is preferred to avoid accidentally unplugging the unit.
   g. All safety-critical components must conform to relevant CE/IEC/UL 60950. E235235. Terminals, wires, fuse, on/off switch, AC/DC PSU. PSU must be Class II protected.
   h. Armored 2 Core Cable:
      1) Spec. BC 6883; 1999
      2) IEC 600332 –3—22 Category A
      3) Temperature rating - 22°F to +140°F
      4) ISO 9001 – 2008 Approved
8. Installation
   a. To ensure proper start-up of equipment the Contractor must consult a Clear-Flow representative.
   b. Optimal results are achieved if the Clear-Flow system is connected to a grounded power outlet (100-240 VAC, 50-60 Hz, 4-amp) that shares the same ground as the recirculation system the unit is being installed on.
   c. The Clear-Flow system must come with two identical signal cables. One is intended as the “T” (transmit) signal connection, the other is intended as the “A” (antenna) signal connection. The “T” signal tag must be installed downstream from the pump and before the filter. It is preferred that the “T” signal tag is mounted on a metal reducer or stainless-steel spool piece downstream of the pump. Alternative installation points for the “T” signal tag can be to mount it on a metal valve, the downstream flange of the pump (if metallic), or a stainless-steel spool piece that would provide a metal-to-water path for the treatment signal to propagate into and throughout the pool’s recirculation system. The “A” tag must be mounted on a metal structure that is electrically connected to the system loop, which may include but is not limited to a grounded filter, nearby structure, or ground rod.
   d. The Contractor must provide a stainless-steel spool piece matching the main recirculation header pipe size installed between flanges downstream of the recirculation pumps and upstream of the filters to facilitate installation of the “T” signal tag per manufacturer requirements. Coating must be 3M Scotchkote 134 fusion bonded epoxy, or approved equivalent on the complete interior of fitting.
   e. The maximum cable run length from the control cabinet (typically wall mounted) to the “T” signal tag installed on the pool recirculation pipe must be 33 feet. Installation locations must be coordinated to meet this parameter.
9. The Clear-Flow system unit must be rated for -40º F + 140º F ambient operation. The unit must have no ventilation requirements and be able to be used indoors and outdoors.

10. After identifying the proper installation location for the “T” tag, the Contractor must prepare the point for strong electrical contact with the tag. The Contractor must remove any epoxy or enamel coating which may inhibit a strong connection. The Contractor to make output connections per wiring schematic. Connect “T” and “A” connections into the labeled terminals inside the enclosure.
11. The Contractor must confirm Clear-Flow system is functioning properly and operating under the following conditions. After powering on the unit, consult the LCD screen to determine the frequency and amperage output.
    a. The optimal frequency range is between 100-350 kHz.
    b. Optimal amperage is between 1 and 5 amps.
    c. If frequency and amperage are outside of these ranges, the Contractor must adjust capacitor switches on the upper right side inside the enclosure.
    d. If current amperage is not achievable under 5 amps after making capacitor adjustments, the Contractor must disconnect “A” tag from inside the terminal block and repeat adjustment of capacitors.
    e. If these steps do not result in an optimal sine wave within the recommended frequency and amperage, the Contractor must consult a Clear-Flow Representative.
    f. As an additional means of signal verification, an oscilloscope can be used. By touching the oscilloscope probe onto the pipe near where the “T” tag is connected, signal strength and frequency can be measured. A clean, declining sine wave with minimal harmonics should be observed.
12. The Contractor must cut excess signal cable, but not to less than 10 feet (3 meters) in length. The Contractor must not coil power cord or signal cables; doing so will interfere with signal operation.
13. The Clear-Flow system must be powered on/off via a switch on the enclosure.
14. Replacement fuses must be UL-listed.
15. The complete installation must be by the manufacturer’s installation instructions and certified on-site for proper operation by the manufacturer’s representative for each system installation.
16. The Clear-Flow system requires that the electrical supply be properly grounded. The Contractor must follow Institute of Electrical and Electronics Engineers (IEEE) standards ensuring a ground resistance of 5 ohms or less.

2.04 FLOW METERS

A. Recirculation flow meter must be provided according to the manufacturer in the filtered water return lines for the pool(s) as indicated on the drawings. The flow sensor must be the GF Signet 2551 insertion magmeter. Provide the coaxial cable from the sensor to the display/transmitter. Flow meter accuracy must be +/- 2% of reading.

B. Impact flow meter must be provided as indicated on the drawings. Impact flow meter must be a pilot, impact ball, variable area type with one piece, impact resistant machined acrylic plastic body. GPM scale must be permanently etched or imprinted on the meter. Flow rate indicator must be of stainless-steel material. The scale range must be appropriate for a specific flow rate. Pipe size to accommodate backwash rate. The backwash piping flow meter must be BLUE-WHITE series F-300 or approved equal.

2.05 WATER LEVEL CONTROLLERS

A. Sight Glass Surge Tank Water Level Controller

1. Provide a water level sensing and control system for the pools that will monitor the water level in the surge tank and automatically activate the auto water make-up control valve. For sensing water level and activating make-up water control valve, use Series ELC-810 Controller housed in a watertight NEMA 4X UL94 5V UL flammability rated polycarbonate enclosure to meet IP66 and NEMA 4, 4X, 12 and 13 ratings. The Controller must utilize two sensors to control water level. ELC-810 series must have a menu-driven LCD display screen and utilize a five-switch user interface for navigation through the menu. The menu must allow changing the following settings: delay to shutoff, alternate sensor option, maximum time on, manual override, delay to normal, type of sensor, high level option, flow sensor active, and sounder with alarm. Menu settings must be capable of password protection. The Controller must be capable of displaying the following data: last fill time, last drain time, last alarm. The Controller must be capable of determining the following: maximum time on exceeded, over current to solenoid valve, no valve/valve wiring problem, and sensor not working properly. The Controller must have a low voltage interlock with auto water make-up solenoid valve, must provide adjustable time delay for increasing level and manual override; and requires 115 VAC, 1 phase, 60 Hz power. Manufactured by AquatiControl Technology, model ELC-810-DS-SG-XXX (Coordinate the specific length(s) of cable required for each controller prior to ordering). Refer to drawings for additional information.
2. Provide a solenoid valve for the high-level sensor, normally opened, stainless-steel fitted, stainless steel body, 24 VAC slow closing type. Refer to Plumbing drawings for pipe size. Interlock with automatic water level control system. Refer to the drawings for additional information. Solenoid must be the 2DSO400-2000 Series by STC VALVE or approved equal. Sizes range from 3” to 6”.
3. Provide a proximity switch sensor that must be sensitive to within +/- 1/8” (4mm) of nominal water level. Supply voltage to sensor must be 12V to 24V DC from Controller. Current consumption must be < or = 15mA. Response frequency must be 100Hz. Maximum control output must be 200mA. Sensor operating temperature must be -25 Deg. C to 70 Deg. C. Operating humidity must range from 35% RH to 95% RH. Sensor must be mounted on the existing sight glass. Sight glass must be mounted to surge tank wall with composite/non-metallic hangers and stainless-steel hardware. Refer to drawings for additional information.
4. Wiring from the sensor to the Controller must be provided and must be connected to the terminal points mounted within a corrosion-resistant, nonmetallic NEMA 4X enclosure. Wiring connections must be made through the bottom of the enclosure. The enclosure size must be no less than 8” wide x 5” high x 4”deep. The access door must be the entire front face panel of the enclosure. Confirm location in field.
5. Major components must be plugged in using WAGO terminal blocks for ease of installation and replacement. Unit must be designed to activate a 24-volt AC solenoid valve.
6. Provide a make-up water solenoid valve, normally closed, stainless-steel fitted, bronze body, 24 VAC slow-closing type. Interlock with automatic water level control system. Refer to the drawings for additional information including size of pipe. Solenoid must be by ASCO 8221 or approved equal.
7. Discharge of make-up water must be into the surge tank. Refer to the drawings for additional information.

2.06 DECK EQUIPMENT, INSERTS & ANCHOR SOCKETS

A. The following items must be supplied unless otherwise noted. Proprietary names are to designate performance only. Equal products will be accepted.

1. Diving Stands

a. Diving stands for the one-meter and three-meter springboards must be provided and mounted on the concrete pedestal as shown on the drawings. The short stand must consist of heavy aluminum and hard anodized castings. The short stand must include an alignment beam to ensure correct installation and spacing between the rear end of the stand and the fulcrum. The short stand must include a fulcrum mechanism that does not require grease or cleaning. Fulcrum must have an adjusting wheel at one end

that can be turned by hand or foot. The short stand must allow for a customizable logo to be installed at its adjusting wheel. Refer to Architect/Owner for logo selection. The finish must be touched up in the field if damaged in shipping or assembly. The diving board anchor hinges and pins must be heat treated aluminum forgings with a design tensile strength of 35,000 psi and must receive Alcoa Duranodic hard anodizing. Hinges must be designed to allow 180-deg. rotation of the diving board to the rear of the stand. Hinges must be mounted on a transverse casting machined to allow seven (7) leveling positions in one-inch increments. The diving board anchor bolts must be 5/8-inch diameter by 3-1/2-inch-long silicon bronze. Diving stands must be manufactured by Duraflex International Corp.

1) Short stand must be Durafirm 16′ DX – 10007 and included with six (6) bronze deck anchors, Durafirm #70-231-900.

2. Diving board must be provided for each stand and must be an aluminum extrusion type springboard. The diving boards must be a Maxi-Flex Model “B" diving board as manufactured by Duraflex International, Inc., #66-231-330 or approved equal. The diving board must be 16 feet long and 19-5/8 inches wide. The top surface must be finished with three coats combined with a mixture of sand and white aluminum oxide to affect the non-skid surface with 200 perforations.

3. Surge tank access hatch must be provided in quantities as shown on the drawings. The access hatch must be a single door 3’-2” x 2’-6” with 1” fillable pan to receive ceramic tile and grout or concrete fill to match the surrounding deck. The frame must be ¼ inch extruded aluminum with built in neoprene cushion and continuous anchor flange. Door must be ¼” aluminum plate reinforced with aluminum stiffeners as required. The door must be equipped with heavy continuous stainless-steel hinges and must have compression spring operators for easy operation. The door must open to 90 degrees and lock automatically in that position. The door must be built to withstand a live load of 150 lbs. per square foot and equipped with a continuous Type 316L stainless-steel hinge, tubular type, and an automatic hold open arm with release handle. Hardware must be type 316L, 18-8, stainless-steel. A flush lift handle and a snap lock with removable key wrench must be provided. Factory finish must be mill finish with bituminous coating applied to the exterior of the frame. The access door must be Type TER single leaf pan type door ordered as a custom size as manufactured by the Bilco Company.

4. Surge tank ladder must be provided for the depth of the surge tank as indicated on the drawings and include a pull-up handrail. The ladder and handrail must be constructed of polypropylene that conforms to ASTM-D4101. Ladders must meet all ASTM0C-497 load requirements and OSHA 1910.26 and 1910.27 specifications. The ladder must be fastened to the floor and wall with 1/2” x 3-3/4” 316 stainless-steel anchors and installed per manufacturer’s instructions. Adjustable mounting bracket must be 8”. Aluminum reinforced copolymer polypropylene rail must be 1-3/4” x 1-3/4” diameter. Steel reinforced copolymer polypropylene ladder rungs must be 1-5/8” x 1-1/4” diameter with molded finger grips, 12” O.C. The ladder must be manufactured by Lane International Corporation or approved equal.

5. Pool Lift
   a. ADA lift (1 required) shall be battery powered, comply with Americans with Disabilities Act (ADA, and have a lifting capacity of 300 pounds. Capable of easy movement to multiple pool locations using a patented counterbalance system. Product shall include secure it kit, battery, charger, battery console cover, waterproof control, foot rest and seatbelt assembly. Pool lift shall be PAL lift by SR Smith.
6. Spa cover
   a. Provide one cover for the existing spa. Cover shall be capable of folding for easy storage and designed per dimensions of the spa as indicated on the drawings. Cover shall be constructed from XPS foam laminated with structural FRP and

metallic reinforcement to provide a rigid, walkable surface. The outer fabric shall be vinyl with custom color and logo selected by the Owner/Architect. The cover shall be provided with locking tie downs and mounting hardware. The cover shall meet all requirements specified in ASTM F 1346-91 for safety.

b. The cover shall be a custom UltraCore cover by ProCore or approved equal.

2.07 SWIMMING POOL FINISHES

A. Swimming Pool Cementitious Finish - Reference specification section 131104, Swimming Pool Cementitious Finish.

B. Swimming Pool Tile

1. Standard grade conforming to ANSI A137.1. Provide trim units as indicated and specified, including special shapes as detailed or required. Tile patterns and colors must be as indicated and specified, colors of approved shades. Mesh mounted or perforated paper backed tile is not allowed where the mesh of paper remains as a permanent part of the installation. If dot mounting is used, a minimum of 67% of the depth of the tile must be free from dots to ensure proper grout curing.

2. Porcelain Mosaic Tile

   a. Tile deck band that contains the depth marker letters and numerals, warning signs and the 15-meter resurfacing markers with color, blends and patterns selected by the Owner/Architect must be Dal-Tile Keystones Matte or Criss Cross, 2”x2” (price group 1-4) or American Olean Unglazed color-body 2”x2” (price group 1-4).

3. Tile Thin-Set

   a. Use either LATICRETE 254 Platinum one-step, polymer fortified, thin-set mortar or MAPEI Keraflex Super one-step, polymer modified, thin-set mortar, used in accordance with the manufacturer’s requirements. As manufactured by LATICRETE International, MAPEI, Inc., or approved equal.

4. Tile Grout

   a. Use either LATICRETE PERMACOLOR Grout or MAPEI Ultracolor Plus FA Grout in accordance with the manufacturer’s requirements. As manufactured by LATICRETE International, MAPEI, Inc., or approved equal. Color selection by Owner/Architect.

2.08 SEALANTS

A. Provide sealed expansion joints as shown on the pool and pool structural drawings or noted on the construction/expansion joint layout, and as required. Expansion joints must be constructed and sealed as indicated and in accordance with the manufacturer’s recommendation. Sealant must be manufactured by LATICRETE International, Inc., Mapei, or Deck-O-Seal. If submerged joints are provided within a pool structure that utilizes a cementitious finish, a 2”x2” tile trim must be installed adjacent to the sealant on each side of the joint.

1. For submerged joints:

   a. Latasil, one component, neutral cure, high performance, 100% silicone sealant in the color(s) as selected by the Owner/Architect. Must be used in conjunction with Latasil 9118 Primer per manufacturer’s recommendations.

   b. Mapesil T, 100% silicone sealant in the color(s) as selected by the Owner/Architect.

2. For joints behind the coping, or other horizontal deck joints:

   a. Deck-O-Seal, two component (gun-grade or pourable, self-leveling), high resilience, non-sag, non-flowing, polysulfide-based sealing compound in the color(s) as selected

by the Owner/Architect. Must be used in conjunction with Rezi-Weld LV per manufacture's recommendations.

B. Material Storage

1. Materials must be stored in the original unopened factory containers in a cool dry location at 60 to 80 degrees F. Protect from the elements and the hazards of construction.

C. Joint Preparation

1. Clean the joints of deleterious material, to sound, clean and dry substrate.

2. If the joint is existing and part of a renovation, inspect and verify that joints have firm, solid sub-surface support up to the underside of the structural slab. Identify those joints that do not have such support and fill voids under the joint with a cement slurry (being careful not to fill the joint space itself) consisting of the following:

   a. Two (2) parts water (by weight) 10 gallons

   b. One (1) part Portland cement 47 lb. bag

   c. ¼ to ½ part bentonite ½, 50 lb. bag

3. In mixing the slurry it is recommended that the water be added first, then the cement, and finally the bentonite. The more bentonite the faster the set. Do not get the slurry on the joint itself.

4. Joint must be formed or filled with an approved, resilient, non-asphaltic, closed cell, polyethylene joint filler material down to firm substrate. Allow space at the top of the joint for the installation of approved closed cell polyethylene backer rod and install same to the required depth below the surface of the slab to control the depth of the sealant bead to within manufacturer requirements.

D. Surface Preparation

1. Concrete surfaces to receive sealant must be fully cured, clean, dry, and free of dirt, dust, curing compounds and other foreign material that might compromise the adhesion and performance of the sealant. Curing aids, form release agents and joint former residue must be completely removed, if necessary, by sand blasting and/or grinding. Loose dust must be brushed off.

2. Prime surfaces to receive Latasil sealant with Latasil 9118 Primer prior to sealant application, and surfaces to receive Deck-O-Seal sealant with P/G Primer prior to application.

E. Application

1. Apply sealant in accordance with the manufacturer's recommendations.

2. Tool the joint immediately after application to ensure a firm, intimate contact with the joint interface.

3. Remove excess sealant and smear from adjacent surfaces with Xylol or Toluol before sealant cures.

4. After the sealant has fully cured (generally a minimum period of five days at 72 degrees and 50% humidity), paint the surface of the sealant with a chlorine resistant chlorinated rubber or equivalent pool paint, in a compatible color as selected by the Owner/Architect. NOTE: Latasil cannot be painted.

2.09 MOVABLE BULKHEAD

A. Bulkhead Welding

1. Inspect all welds on the existing bulkhead assemblies. Inspect and reweld the buoyancy chamber on the shallow-end bulkhead to ensure that the buoyancy system allows 100% of the total weight of the bulkhead to be displaced for easy movement.

B. Bulkhead Grating

1. The new grating in the existing bulkhead shall be formed of extruded PVC sections. The top surface of the ribbed "I" beam section shall be 5/8" wide and the depth shall be 1". The top surface shall be serrated to create a non-skid surface. The space between extruded sections shall not exceed 9/32".

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS, INSPECTION AND PREPARATION

A. Carefully examine the contract documents for requirements that affect the work of this section. Prior to starting work, notify the Architect of defects requiring correction. Do not start work until conditions are satisfactory.

B. Verify that work by others, related to this section, has been completed. This includes earthwork, concrete work, and mechanical, electrical, and plumbing connections.

C. Protect materials and work completed by others from damage while completing the work in this section.

3.02 FIELD MEASUREMENTS

A. Verify benchmark and pool location prior to layout.

B. If field measurements differ from the construction drawing dimensions, notification must be given to the Architect prior to proceeding with work.

3.03 TOLERANCES FOR CONSTRUCTION OF THE POOL SHELL

A. The completed structures must be constructed level and to the dimensions, elevation, depths, and thickness as shown on the plans.

B. The elevation tolerance of the pool shell and gutter lip must be plus or minus 1/8 inch.

C. The vertical wall surface tolerance of the pool shell, for the first 36 inches from the water surface must be plus or minus 1/4 inch from plumb measured with a 6-foot straight edge.

D. For competitive racecourses, the following pool shell tolerances must apply:

Course	Tolerance	Minimum	Maximum
25 Yard	+ 1 3/16” /- 0”	75’ – 3/4”	75’ – 1 15/16”
50 Meter	+ 0.010 M	50.02 M	50.03 M

1. The above dimensions include allowances for a touchpad at each end of the course. The maximum dimension includes the construction tolerance. These above tolerances also apply to courses utilizing moveable bulkhead(s).

2. The above dimensions apply to a vertical plane extending 1’-0” above and 3’-0” below the surface of the water at points of both end walls.

E. Provide the services of a registered engineer or land surveyor who must measure and certify the length of each lane for each possible racing course. Courses designed with touchpads for competition must be measured and certified with touchpads in place. Course length survey must be made with the pool filled with water between 78- and 82-degrees Fahrenheit. The Contractor to submit compliant survey measurements to the Architect for review and record.

F. Ground wires or grade pins, if used, must be installed in such a manner that they accurately outline the section of the pool shell as indicated on the plans. They must be located at intervals sufficient to ensure proper thickness throughout and must be maintained tight. Grade pins or grounding wires must not be permanently embedded in the pool shell.

3.04 PIPING INSTALLATION

A. General

1. Provide and erect, according to the best practices of the trade, piping shown on the drawings and required for the complete installation of these systems. The piping shown on the drawings must be considered as diagrammatic in indicating the general run and connections and may or may not in parts be shown in its true position. The piping may have to be offset, lowered, or raised as required or as directed at the site. This does not relieve responsibility for the proper erection of the systems or piping in every respect suitable for the work intended as described in the specifications and approved by the Architect. In the erection of piping, it must be properly supported, and proper provisions must be made for expansion, contraction and anchoring of piping. Piping must be cut accurately for fabrication to measurements established at the construction site. Pipe must be worked into place without springing and/or forcing, properly clearing windows, doors, and other openings and equipment. Cutting or other weakening of the building structure to facilitate installation will not be permitted. Pipes must have burrs and/or cutting slag removed by reaming or other cleaning methods in strict accordance with the manufacturer's instructions. Changes in direction must be made with fittings. Open ends of pipes and equipment must be properly capped or plugged to keep dirt and other foreign materials out of the systems. Plugs of rags, wool, cotton waste or similar materials will not be used in plugging. Piping must be arranged so as not to interfere with removal and maintenance of equipment, filters, or devices, and so as not to block access to manholes, access openings, etc. Flanges or unions applicable for the type of piping specified must be provided in the piping at connections to items of equipment. Piping must be installed to ensure noiseless circulation. Valves and specialties must be so placed to permit easy operation and access.

B. Pipe Hangers and Supports

1. Pipes must be adequately supported by pipe hangers and supports as specified.

2. Horizontal PVC Schedule 80 piping must be supported in accordance with the manufacturer’s recommendations for fluid temperature not exceeding 120-degree F and as listed below:

Nominal Pipe Size	Hanger Support Spacing	Minimum Rod Size for Single Rod Hanger
1-1/4” and less	5’-0”	3/8”
1-1/2” to 3”	6’-0”	1/2”
4” to 6”	8’-0”	5/8”
8” to 12”	10’-0”	7/8”
Greater than 12”	12’-0”	1”

3. Horizontal CPVC Schedule 80 piping must be supported in accordance with the manufacturer’s recommendations for fluid temperature not exceeding 140-degree F and as listed below:

Nominal Pipe Size	Hanger Support Spacing	Minimum Rod Size for Single Rod Hanger
½” and less *	4’-0”	3/8”
¾” to 2”	6’-0”	3/8”
2-1/2” to 3”	7’-0”	1/2”
4” to 8”	8’-0”	7/8”
Greater than 12”	10’-0”	1”

4. Round rods supporting the pipe hangers must be of the following dimensions:

Nominal Pipe Size	Rod Diameter
1/2" to 2" pipe	-3/8" rod
2-1/2" to 3" pipe	-1/2" rod
4" to 5" pipe	-5/8" rod
6" pipe	-3/4" rod

5. Hanger rods must be galvanized steel. Provide for controlling level and slope by turn buckles or other approved means of adjustment and incorporate lock nuts.

6. Provide means of preventing dissimilar metal contact such as plastic-coated hangers, copper colored epoxy paint, or non-adhesive isolation tape.

7. Provide hangers to provide a minimum of 1-inch space between finished covering and adjacent work.

8. Place a hanger within 12 inches of each horizontal elbow.

9. Support vertical piping independently of connected horizontal piping. Support vertical pipes at every floor. Wherever possible, locate riser clamps directly below pipe couplings or shear lugs.

10. Where several pipes can be installed in parallel and at the same elevation, provide trapeze hangers as specified. Trapeze hangers must be spaced according to the smallest pipe size or provide intermediate supports according to the support spacing schedules. Provide heavier members as required for the load supported for the entire span distance. Hanger rods must be as specified above and properly sized for the load supported, but not less than 5/8 inches diameter.

11. Piping must be rigidly supported from the building structure by means of hanger assemblies properly selected and sized for the application in accordance with the manufacturer's recommendations and specifications. Do not support piping from other pipes, ductwork or other equipment that is not building structure. Do not modify the building structure for hanger installation.

12. Attachment of piping hangers to the building structure must be provided in a manner approved by the Architect. Provide concrete inserts installed by others in the building construction at the time the concrete is poured, and hangers must be attached to these inserts.

13. The use of pipe hooks, chains, or perforated iron for pipe hanger supports will not be permitted.

14. A design for piping in a service tunnel, if required, supported by a structure must be submitted for approval. The structure must be non-corrodible and must be of a size and configuration to rigidly support the piping as shown in the plans at a minimum spacing as shown below.

C. Flushing, Draining and Cleaning Pipe Systems

1. Flush out water systems with water before placing them in operation. Other systems must be cleaned by using compressed air or nitrogen. After systems are in operation and during the test period, strainer screens must be removed and thoroughly cleaned.

D. Expansion and Contraction

1. Make necessary provisions for expansion and contraction of piping with offsets, loops, flexible connections, and anchors as required to prevent undue strain. Provide shop drawings for method and arrangement for control of expansion and contraction of piping.

E. Testing

1. Piping installation and pressure testing must be performed by the Contractor and reviewed by the Owner or a designated representative of the Owner before commencement of backfilling. A minimum one (1) week notice must be provided prior to review. Results must be submitted to the Architect. Pictures with time stamps for each section of piping must be included with testing report(s) and be submitted within one (1) week of the pressure test(s).
2. Suction and supply pool piping must be capped and hydraulically pressure tested with water to a pressure of not less than 50 PSI for a period of no less than two (2) hours. Pressure testing must be conducted in accordance with ASTM D2774. The temperature of the water used for the test must be between 40ºF and 90 ºF.
3. Gravity pool piping must be capped and hydraulically pressure tested with water to a pressure of not less than 20 PSI for a period of no less than two (2) hours. Pressure testing must be conducted in accordance with ASTM D2774. The temperature of the water used for the test must be between 40ºF and 90 ºF.
4. Pneumatic testing (air) of any pool piping will not be accepted.
5. The Contractor must verify recirculation fitting pressure limitations can meet testing requirements prior to installation and testing. Piping may be tested prior to a recirculation fitting connection (skimmer, main drain, etc.) within 5’-0” of connection point.
6. Maintain a sustained 20 PSI pressure on pool related piping throughout the course of construction.
7. Adhere to the applicable provisions of Division 22 - Plumbing, "General Provisions" and "Basic Materials and Methods" for installation of piping system.

3.05 EQUIPMENT AND SYSTEMS INSTALLATION

A. Provide and assemble equipment, special parts and accessories as shown on pool drawings, specifications, and shop drawings of the equipment suppliers.

B. Provide anchors and inserts imbedded in the deck including fittings, inserts and structure sleeves and required anchorage as shown on the plans and as indicated in this section of the specifications. Equipment must be set true and plumb, using factory jigs where available. Removable equipment items must be easily removable from anchors and must fit without noticeable wobble.

C. Provide templates for equipment anchors. Provide anchor bolts of the size and spacing as required by the equipment manufacturer. Anchor bolts must be stainless-steel Type 316L and of a length capable of adequate anchorage into rough slab-on-grade allowing for finish deck tile and setting bed. Anchors must be set and cast into place during building concrete work. Inspect anchor settings for horizontal and vertical alignment prior to placing concrete.

D. Provide equipment and systems in accordance with manufacturer's directions. Equipment must be assembled and in place for final observation.

E. Items necessary to complete this section are shown on the plans or described in the specifications including items that may be purchased by the Owner. Items are detailed and specified as a guide for dimensional purposes. Make provisions accordingly and submit shop drawings and submittals based on that data.

3.06 START-UP AND INSTRUCTION

A. Supply the services of an experienced swimming pool operator/instructor for a period of not less than two days (total 16 hours) after the pool(s) have been filled and initially placed in operation. During this period, the Owner's representatives who will be operating the pool(s) must be thoroughly instructed in phases of the pool's operation. Deliver six (6) complete sets of operating and maintenance instructions for the swimming pool, structures, finishes and component equipment. Prior to leaving the job, obtain written certification from the designated Owner's representative

acknowledging that the instruction period has been completed and necessary operating information provided. Include the cost of two (2) additional days (total 16 hours) of instruction and operational check out by the qualified representative during the first season of operation.

B. Written reports of each of these visits outlining the pool's operation, competence and performance of the pool's operation personnel, and other pertinent comments must be submitted to the Owner and Architect/Engineer within one (1) week after each visit.

C. Provide specific written procedures that must be followed for emptying and refilling the pool as mentioned previously in this section. The procedures must be included in the bound volume of operating instructions and references in the front index with a note headed by the words: "CAUTION -- VERY IMPORTANT".

END OF SECTION 13 1100

SECTION 13 1104 - SWIMMING POOL CEMENTITIOUS FINISH

PART 1 - GENERAL

1.01 SUMMARY

A. Provide a conventional white marble plaster interior finish to the pool structure. Provide installation of bond coat prior to application of pool finishes in strict accordance with manufacturer's instructions. Provide ceramic tile for the resurfacing markers and other tile installations as shown and detailed on the contract drawings and in strict accordance with these specifications.

B. Provide water analysis and pre-fill requirements.

1.02 SUBMITTALS

A. Color Samples

1. Provide physical color samples for review and approval by the Owner/Architect.

B. Mockup

1. Prepare 12-inch square panel at the site showing color and texture for pool plaster for approval by the Owner/Architect. Finished cementitious finish work must match the approved sample panel.

C. Test Report

1. Submit results of domestic water analysis and calculation of amounts of chemicals required to balance pool water on initial fill of pool.

1.03 PRODUCT DELIVERY AND STORAGE

A. Deliver manufactured materials to site in manufacturers' original unbroken packages or containers bearing manufacturers' name and brand labels. Keep cementitious materials dry until ready to be used and stored off the ground, under cover and away from damp surfaces.

1.04 JOB CONDITIONS

A. Apply plaster in swimming pool only when ambient temperature is above 40 degrees F and below 90 degrees F and protect applied plaster from rapid drying by sun or wind until curing is completed or pool is filled with water. Confirm and comply with applicable manufacturer's installation requirements.

1.05 QUALITY ASSURANCE

A. The Contractor must have two years' experience in similar pool projects, for which the Owner may require written proof thereof and proper tools to install plaster.

PART 2 - PRODUCTS

2.01 GENERAL MATERIALS AND REQUIREMENTS

A. Portland Cement

1. ASTM C150, type I white Portland cement.

B. Hydrated Lime

1. ASTM C206, type S.

C. Aggregates for Conventional Pool Plaster Finish Coat

1. White marble aggregates uniformly graded within following limits, passing the no. 30 sieve (percentage retained (by weight plus or minus 2%) on each sieve):

Sieve Size	Minimum	Maximum
No. 30	0	0
No. 50	25	50
No. 100	75	90
No. 200	90	100

D. Water

1. Clean, fresh, from domestic potable source.

E. Bond Coat

1. Scratch Kote System by Multicoat Corporation, Bond Kote by SGM, Inc., or approved equal, in strict accordance with manufacturer's instructions. Apply and cure bond coat per manufacturer's recommendations. After proper curing of bond coat, lightly moisten with clean potable water prior to application of cementitious finish. Ensure bond coat is free of foreign matter prior to plastering.

2. A bond coat must be installed over all interior pool surfaces prior to plaster application unless the surface profile is adequate to omit the bond coat in accordance with the manufacturer's recommendations. A manufacturer's representative must visit the site and provide written confirmation that the bond coat can be omitted, and all warranties will be maintained.

F. Proportions and Mixing

1. Materials are specified on a volume basis and must be measured in approved containers which will ensure that the specified proportions will be controlled and accurately maintained during the progress of the work. Measuring materials with shovels ("shovel count") is not permitted.

2. Conventional White Marble Pool Plaster Finish Coat: Mix finish in proportion of one part by volume of white Portland cement to not more than two parts by volume of aggregates (specified white marble dust).

3. Mixing

a. Perform mixing in approved mechanical mixers of the type in which quantity of water can be controlled accurately and uniformly. While mixer is in continuous operation, charge approximately 90% of estimated quantity of water, half of sand, cement, and the other one-half of the sand into mixer in that sequence and mix thoroughly with remainder of water until mixture is uniform in color and consistency. Avoid excess mixing to prevent hasty solution of cement resulting in accelerated set. Discard plaster that has begun to set before it is used; re-tempering is not allowed. Do not use caked or lump materials. Completely empty mixer and mixing boxes after each batch is mixed and keep free of old plaster.

4. Coverage

a. Each 80 lb. bag to cover approximately 25 square feet to a thickness of 3/8".

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACES AND BOND COAT

A. Surface must be structurally sound and free of foreign substances and debris that could reduce or impair adhesion, free of dirt, oil, grease, curing compounds or other foreign materials. Sound and remove loose concrete to firm substrate. Surfaces must be roughened by sand blasting or water

blasting. Shot blasting, scarifying, or grinding can also be accepted methods of surface preparation. Pressure-wash the entire surface. Wash with trisodium phosphate (TSP) using a stiff broom. Thoroughly wash/rinse with clean potable water. Surface defects or holes in the substrate must be patched per manufacturer's recommendations.

1. National Plasterers Council Surface Preparation Definitions

    a. Pressure Washing: The washing or cleaning of a surface by a stream of water ejected from a nozzle at high velocity, typically in the range of 1,000 psi – 4,000 psi.

    b. Water Blasting: The cutting, abrading, or removal of a surface or substrate by a stream of water ejected from a nozzle at ultra-high velocity, typically in the range of 10,000 psi – 40,000 psi.

2. Apply and cure bond coat in strict accordance with manufacturer's instructions. After proper curing of bond coat, lightly moisten with clean potable water prior to application of cementitious finish. Ensure bond coat is free of foreign matter prior to plastering.

B. Do not apply finish materials to base surfaces containing frost. Provide temporary coverings as required to protect adjoining surfaces from staining or damage by plastering operations.

C. Protect or mask adjacent surfaces that are not scheduled to receive cementitious finish. If expansion or construction joints exist in the areas where cementitious finish will be applied cover plastic joints for protection (if plastic joints are used). Additionally, mark joints for saw-cutting if area will be saw-cut.

D. Verify that concrete surfaces that are to receive a cementitious finish have cured for a minimum of 5 days. Consideration should be given for the application of a primer for concrete structures that is over 28 days old to improve bonding.

3.02 APPLICATION OF CEMENTITIOUS FINISH

A. General

1. Confirm application requirements with the manufacturer. Apply finish plaster to the properly prepared substrate at the minimum thickness required by the manufacturer, but no less than 3/8-inch thickness. Apply finish plaster by hand or machine. If plastering machine is used, control fluidity of plaster to have a slump not exceeding 2-1/2 inches when tested using a 2" by 4" by 6" high slump cone. Do not add additional water to the mix subsequent to determining water content to meet this slump. Perform slump test according to following procedure:

    a. Place cone on level, dry non-absorptive base plate.

    b. While holding cone firmly against base plate, fill cone with plaster taken directly from hose or nozzle of plastering machine, tamping with a metal rod during filling to release air bubbles.

    c. Screed off plaster level with top of cone. Remove cone by lifting it straight up with a slow and smooth motion.

    d. Place cone in a vertical position adjacent to freed plaster sample suing care not to jiggle base plate.

    e. Lay straightedge across top of cone being careful not to vibrate cone, measure slump in inches from bottom edge of straightedge to the top of slumped plaster sample.

5. Mixing of materials and application procedures must be done in accordance with the manufacturer's recommendations and requirements. The manufacturer's representative must visit the site to verify field conditions, confirm materials and application requirements and ascertain that materials and systems are so installed. Documentation must be provided to this effect.

B. Workmanship

1. Unless otherwise required by the manufacturer, apply finish plaster in two coats by "double-back" method with second coat applied as soon as first coat is tamped and initially floated. Apply plaster with sufficient pressure to provide a good bond on bases. Work plaster to screeds at intervals of from 5 feet to 8 feet on straight surfaces. Apply smooth trowel finish without waves, cracks, trowel marks, ridges, pits, crazing, discoloration, projections, or other imperfections. Form plaster carefully around curves and angles, well up to screeds. Take special care to prevent sagging and consequent drooping of applications. Produce surfaces free of visible junction marks in finish coat where one day's work adjoins another. Finish proprietary plaster as required by the manufacturer.

2. Cementitious finishes must be applied by a licensed applicator as approved by the manufacturer.

C. Curing

1. Curing cementitious finishes with fine fog water spray applied to finish coat as frequently as required to prevent dry-out of surface, or as directed by the manufacturer of the cementitious finish. Keep plaster damp until the pool is filled. Prevent damage or staining of plaster by troweling or curing.

D. Patching, Pointing, and Cleaning Up

1. Upon completion, cut out and patch loose, cracked, damaged, or defective plaster; patches matching existing plaster in texture, color, and finish, flush with adjoining plaster. Perform pointing and patching of surfaces and plasterwork abutting or adjoining other finish work in a neat and workmanlike manner. If 10 percent or more of the pools plaster finish is found to be defective, the plaster must be removed and replaced complete from surfaces. Remove plaster droppings or spattering from surfaces. Leave plaster surfaces in clean, unblemished condition ready for pool filling. Remove protective coverings from adjoining surfaces. Remove rubbish and debris from the site.

3.03 PRE-FILL SPECIFICATION

A. Contractor must employ a qualified water testing agency to analyze the domestic water with which the pool will be filled within 2 weeks of the plaster date and must employ a swimming pool experienced water chemistry consultant to determine types and quantities of chemicals required to ensure calcium-balanced water immediately upon the completion of water filling. Refer to section 131100 for water filling requirements.

1. Have on hand quantities of the chemicals as determine above, plus 25% overage for follow-up treatment. These chemicals, typically including calcium chloride, bicarbonate of soda, and muriatic acid are in addition to standard bromine/chlorine products and alkalizer/pH control products required elsewhere.

B. The pool(s) must not be plastered until directed by the Owner’s representative and the filtration system and chlorination system are complete and ready for start-up. The Contractor must supply chemicals required for treatment of the pool water.

C. The Contractor must submit domestic water analysis to the Owner and/or Architect at least 2 weeks prior to filling the pool(s).

END OF SECTION 13 1104

SECTION 13 1105 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Demolition and removal of selected pool materials and equipment.
2. Salvage of existing items to be reused or recycled.
3. Protection of surrounding areas.

B. Related Requirements:

1. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.

C. Related work specified in other sections:

1. Section 131100 - Swimming Pools
2. Section 131104 – Swimming Pool Cementitious Finish

1.03 DEFINITIONS

A. Remove: Detach and remove items from the pool and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Store: Detach and store existing swimming pool items intended for reinstallation and/or reuse.

1.04 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of the Contractor.

1.05 SUBMITTALS

A. Proposed Protection Measures: Submit plan and report that indicates the measures proposed for protecting individuals and property for dust control and for noise control. Double containment and dedicated exhaust required. Indicate proposed locations and construction of barriers.

1.06 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.07 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials

1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owners Representative.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with OSHA Standards 29 CFR Part 1926 & 1910.

C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that all piping to remain has been plugged before starting selective demolition operations. All piping and pool equipment to remain fully drained immediately following the draining of the pool until the pool is ready to be refilled and started up for final system commissioning.

B. Review record documents of existing construction provided by Owners Representative. Owners Representative does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

F. Notify owner on completion of selective demolition, and obtain documentation verifying that existing surfaces have been inspected and accepted.

3.02 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Contractor to provide a dust control plan for review by the Owner’s Representative.

2. Double containment with dedicated exhaust of work area and pathway of removal is required.
3. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
4. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
5. Cover and protect furniture, furnishings, and equipment that have not been removed.
6. Comply with requirements for temporary enclosures and dust control.

3.03 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing pool finishes as described and/or indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Remove existing marcite plaster finish down to the concrete substrate.
2. Remove existing short dive stands.
3. Remove existing bulkhead grating.
4. Remove existing hydraulic pool lift.
5. Remove existing sand filter tanks and piping.
6. Remove pool piping between the existing filter system and the chemical room.
7. Remove existing surge tank hatch and enlarge opening for new hatch.
8. Remove water level controller assembly.
9. Dispose of demolished items and materials promptly.

3.04 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Protect all finished surfaces during the demolition process.
2. Do not allow demolished materials to accumulate on-site.
3. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.05 CLEANING

A. Clean adjacent structures and improvements including but not limited to structural spaces of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 13 1105

RFP 00312 Rec Pool Renovation
Schedule C - Fee Schedule

Design	
Engineering	
Demolition	
Pool Shell	
MEP Systems	
Finishes	
Equipment	
Permitting	