REQUEST FOR PROPOSALS

RFP NO: 26-009500
DATE ISSUED: May 29, 2026

SEND PROPOSALS TO:
Purchasing Manager, Lawrence Pruitt
Board of Directors of the City of St Louis Municipal Library District DBA St. Louis Public Library
1415 Olive Street
St. Louis, MO 63103
OR: bids@slpl.org

BID DUE DATE: July 3, 2026 by 2:00 p.m.
PURCHASING MANAGER: Lawrence Pruitt

EMAIL ADDRESS: lpruitt@slpl.org

BOARD OF DIRECTORS OF THE CITY OF ST LOUIS MUNICIPAL LIBRARY DISTRICT DBA ST. LOUIS PUBLIC LIBRARY
RFP 26-009500 MACHACEK BRANCH REPAIRS

This Proposal is subject to all the terms and conditions of this Request for Proposals and any Proposer representations, as well as accompanying specifications. The signature of the Proposer indicates that Proposer understands these documents and will comply with them.

Name, Address, and Contact Information of Authorized Representative of Proposer

Print Name: _____

Print Title: _____

Print Company Name: _____

Print Address, City, State, Zip: _____

Print Telephone _____

Print Email: _____

Proposer Signature: _____

Proposer is:_____individual _____corporation_____partnership _____LLC_____

Other – describe_____

BOARD OF DIRECTORS OF THE CITY OF ST. LOUIS MUNICIPAL LIBRARY DISTRICT DBA ST. LOUIS PUBLIC LIBRARY
RFP 26-009500 MACHACEK BRANCH REPAIRS

REQUEST FOR PROPOSAL SCHEDULE

RFP Issued	May 29, 2026
Public Notification of RFP	May 29, 2026
Pre-bid Walkthrough ***Meet at Machacek (6424 Scanlan Ave., St. Louis, MO 63139)**	June 16, 2026 @9:00 a.m.
Questions from Proposers due to Library	June 19, 2026 @ 10:00 a.m.
Proposals Due	July 3, 2026 @ 2:00 p.m.

BOARD OF DIRECTORS OF THE CITY OF ST. LOUIS MUNICIPAL LIBRARY DISTRICT DBA ST. LOUIS PUBLIC LIBRARY
RFP 26-009500 MACHACEK BRANCH REPAIRS

INSTRUCTIONS TO PROPOSERS

The St. Louis Public Library, a municipal library district, is a political subdivision of the State of Missouri, and a body corporate with all the powers and rights of like or similar corporations.

In accordance with the St. Louis Public Library's procurement policy, Proposals will be handled so as not to permit disclosure of the identity of any Proposer or the contents of any Proposal to competing Proposers during the process of negotiation. A register of Proposals shall be prepared containing the name of each Proposer, the number of modifications received, if any, and a description sufficient to identify the item offered. The register of Proposals shall be open for public inspection only after a final contract is executed.

Whenever a material, article, or piece of equipment is identified by reference to manufacturer's or vendor's names, trade names, catalog numbers, etc., it is intended merely to establish a standard, and, any material, article, or equipment of other manufacturers and vendors that will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment proposal(s) are, in the opinion of the St. Louis Public Library, of equal substance and function. Substitute items may be rejected at the discretion of the St. Louis Public Library.

The right is reserved by the St. Louis Public Library to cancel the RFP or to reject in whole or in part when it is for good cause and in the best interest of the St. Louis Public Library and to waive any irregularity or informality with respect to any Proposal. The St. Louis Public Library reserves the right to split awards, make multiple awards and to reject all Proposals.

Proposer's are expected to examine specifications, schedules, drawings, and all instructions. Failure to do so will be at Proposer's risk.

Questions about the RFP should be made in writing and directed to Lawrence Pruitt, Purchasing Manager at **lpruitt@slpl.org** or at the address provided below. Responses, when provided, will be included in a written amendment. To preserve the integrity of the selection process, questions regarding this RFP should only be directed in writing to Mr. Pruitt, **lpruitt@slpl.org**. **Proposal inquiries must be submitted in writing for the St. Louis Public Library review no later than June 19, 2026, by 10:00 a.m.,** to allow for the St. Louis Public Library's reply prior to Proposal submissions.

Proposals must be in ink or typewritten and must be manually signed by a company official. All Proposal document pages should be initialed and dated by the company submitting the Proposal**.**

It is the responsibility of the Proposer to deliver the Proposal and/or RFP modification on or before the hour and date specified for the receipt of Proposals. Proposals received late will be rejected.

Proposals and modifications should be submitted in sealed envelopes addressed to the attention of the **Purchasing Manager, St. Louis Public Library, 1415 Olive St., St. Louis, MO 63103** by 2:00 p.m. at that location on or before July 3, 2026. EMAIL PROPOSALS WILL ALSO BE ACCEPTED. **PLEASE SEND YOUR EMAIL PROPOSAL RESPONSE TO: bids@slpl.org. The Proposal RFP number shall show in the subject line of the email.**

BOARD OF DIRECTORS OF THE CITY OF ST. LOUIS MUNICIPAL LIBRARY DISTRICT DBA ST. LOUIS PUBLIC LIBRARY
RFP 26-009500 MACHACEK BRANCH REPAIRS

REQUEST FOR PROPOSAL

May 29, 2026

I. INTRODUCTION

The St. Louis Public Library requests Proposals from qualified Proposers for **Machacek Branch Repairs.** Proposals must be received no later than 2:00 p.m., July 3, 2026.

Lawrence Pruitt, Purchasing Manager
Board of Directors of the City of St Louis
Municipal Library District DBA St. Louis Public Library
1415 Olive Street
St. Louis, MO 63103-2389

Electronic submissions will be accepted. The email address is bids@slpl.org.

The RFP number must be the subject in the subject line.

Questions and clarification inquiries about this RFP must be received prior to 10:00 a.m., Friday, June 19, 2026. To preserve the integrity of the selection process, questions regarding this RFP should only be directed in writing to Lawrence Pruitt: lpruitt@slpl.org.

The St. Louis Public Library wishes to engage a Proposer to provide the services in accordance with and in the furtherance of the St. Louis Public Library's purpose and mission. This RFP seeks Proposals from qualified vendors for the goods and services described in this RFP.

The selected Proposer shall enter into a vendor agreement with the St. Louis Public Library for the services consistent with the terms of this RFP, and with the general provisions contained in this RFP.

BOARD OF DIRECTORS OF THE CITY OF ST. LOUIS MUNICIPAL LIBRARY DISTRICT DBA ST. LOUIS PUBLIC LIBRARY
RFP 26-009500 MACHACEK BRANCH REPAIRS

II. TERMS AND CONDITIONS

In addition to the RFP requirements elsewhere in this RFP, any Proposer that may be selected to perform the services described in the RFP and to enter into a Vendor Agreement with the Library must agree to a number of general terms and conditions. If a Proposer cannot agree to any of the stated general conditions, its Proposal must clearly state the reason for any such non-compliance.

A. Labor and Materials. The Proposer shall provide all labor, materials and supplies for the services to be performed under this RFP.

B. Form of Agreement. The submission of a Proposal constitutes the agreement of any submitting Proposer that any contract to be drawn as a result of an award to the Proposer will be prepared by counsel for the St. Louis Public Library and will be the controlling agreement. The Proposers are requested, however, to submit copies of their applicable standard contract or engagement forms for information purposes.

C. Compliance with Laws. In performing under a Vendor Agreement, the selected Proposer shall comply with all applicable laws, ordinances, rules, regulations, or standards of federal, state and local governments having authority or jurisdiction over the Services or performance of the Services, or any lawful orders pertaining in any way to the Services to be provided by the St. Louis Public Library.

D. Out of State Proposer. It shall be a condition to a Vendor Agreement that any out-of-state Proposer that may be selected to provide the Services shall be duly registered and qualified to do business within the State of Missouri.

E. Prime Contractor Responsibility. Planned use of subcontractors in connection with a Vendor Agreement should be clearly explained and described in the Proposal. The use of any subcontractor in connection with the Services shall be subject to the approval of the St. Louis Public Library, and any approved subcontractor shall agree to be bound by and subject to all terms and conditions of a Vendor Agreement between the St. Louis Public Library and the selected Proposer. The Proposer as prime contractor will be responsible and must take responsibility for the performance of all Services under a Vendor Agreement whether or not subcontractors are used.

F. Independent Contractor. It is expressly understood and agreed that the selected Proposer shall be an independent contractor and not an employee of the St. Louis Public Library. A Vendor Agreement will not constitute, create, give rise to, or otherwise recognize joint venture, partnership, or formal business organization of any kind between the parties and the rights and obligations of the parties shall be only those expressly stated in a Vendor Agreement. The Proposer represents and warrants that no persons supplied by it in the performance of a Vendor Agreement are employees of the St. Louis Public Library and further agrees that no rights of the St. Louis Public Library's retirement or personnel rules accrue to such persons. The Proposer shall have complete responsibility for all salaries, wages, bonuses, retirement, withholdings, worker's compensation and insurance, unemployment compensation, other benefits and taxes and premiums, appurtenant thereto concerning all employees and personnel provided by Proposer in the performance of the Services under a Vendor Agreement and shall indemnify and hold the St. Louis Public Library harmless with respect thereto.

G. <u>Indemnification</u>. Proposer shall defend, indemnify and hold harmless the St. Louis Public Library and its directors, officers, employees, representatives, agents contractors, subcontractors, licensees and successors and assigns from and against any and all claims, demands, penalties, liens, losses, fines, liabilities, damages, interest, costs, or expenses (including without limitation reasonable attorneys' fees and court costs), whether or not involving a third party claim, arising out of or in connection with: (a) the acts, error, omissions conduct, or operations of Proposer, provided that any such claim, damage, loss, or expense is caused or is claimed or alleged to have been caused, in whole or in part, by any negligent act, whether active or passive, error, omission, conduct, or operation of any negligent act, whether active or passive, error, omissions conduct, or operation of Proposer, or any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable; or (b) any breach of any of the representations, warranties, covenants, obligations, or duties contained in a Vendor Agreement; or (c) any violation of any applicable federal, state or local laws, rules or regulations. The indemnification obligations hereunder shall not be limited by reason of the enumeration of any insurance coverage required under a Vendor Agreement.

H. <u>Required Insurance Coverage</u>. Proposer shall secure, pay for and maintain the following insurance policies in full force and effect throughout the term of a Vendor Agreement, which policies shall protect against any loss or claim arising from or relating to a Vendor Agreement, the Services and activities, or presence at the St. Louis Public Library facilities, and any act or omission of Proposer or its employees and/or agents or subcontractors in connection with the Services provided under a Vendor Agreement, and shall cover the contractual indemnification liability assumed by the Proposer or pursuant to a Vendor Agreement.

1. Commercial General Liability Insurance with limits of not less than One Million Dollars ($1,000,000) per occurrence for bodily injury (including death), personal injury, special form property damage, fire legal liability, contractual liability, independent contractors, errors and omissions, and products and completed operations, and Two Million Dollars ($2,000,000) general aggregate. The policy shall be written on an occurrence basis. The policy shall also not have exclusions for any of Proposer's activities at Central Library. Any deductible shall be at Proposer's expense.

2. Business, automobile coverage, including coverage for owned, leased, and hired vehicles, which shall include vehicle and property (cargo) damage, and bodily injury, in an amount not less than One Million Dollars ($1,000,000.00).

3. Worker's Compensation insurance, affording coverage in accordance with the applicable state laws
covering all of Proposer's employees, and Employer's Liability coverage in accordance with the applicable state laws but no less than Five Hundred Thousand Dollars ($500,000) each accident, Five Hundred Thousand Dollars ($500,000) each employee and Five Hundred Thousand Dollars ($500,000) policy limit;

4. Blanket employee dishonesty coverage with One Hundred Thousand Dollars ($100,000) limit, with coverage extending to funds and/or property held by Proposer on behalf of St. Louis Public Library.

5. Property Insurance coverage for all materials, equipment, and other items owned, borrowed, or leased by Proposer shall be Proposer's responsibility. The St. Louis Public Library shall not be responsible for such materials, equipment, and other items owned, borrowed, or leased by Proposer.

6. Umbrella Liability insurance at not less than Five Million Dollars ($5,000,000) limit for each

occurrence providing for excess coverage over the limits and coverages prescribed above in Subsections I. (1), (2), (3), and (4) above, which such policy shall be written on an occurrence basis.

All insurance policies addressed in Subsections I. (1), (2), (4), and (6) above shall be endorsed to name the following as additional insured's:

City of St. Louis Municipal Library District and its directors, officers, employees, representatives, agents, contractors, licenses, and successors.

All insurance policies required hereunder: (1) shall be endorsed to state that the insurance is primary and not contributive to any other insurance available to the St. Louis Public Library: (2) shall provide for a waiver of rights of subrogation against the additional insurers on the part of the insurance carriers; (3) shall be written with insurance companies licensed to do business in the State of Missouri and rated no lower than A- in the most current edition of A.M. Best's Property-Casualty Key Rating Guide, and (4) shall provide for no less than thirty (30) days advance written notice to the St. Louis Public Library prior to cancellation, non-renewal or material modification.

All insurance policies of or on behalf of the St. Louis Public Library required in a Vendor Agreement shall contain the following language: "This insurance policy does not apply to any claim or suit which is barred by the doctrines of sovereign immunity or official immunity but we will have the right and duty to defend any suit. No provision of this endorsement or of the policy, to which it is attached, shall constitute a waiver of our right, or the right of any of our employees in the course of their official duties, or the right of any insured, to assert a defense based on the doctrines of sovereign immunity or official immunity for any monetary amount whatsoever."

Proposer shall deliver to the St. Louis Public Library, prior to commencement of Services under a Vendor Agreement, Certificates of Insurance confirming the existence or issuance of all insurance policies required to be carried hereunder ("Certificates of Insurance"). If any such policy is not obtained, or if all Certificates of Insurance are not delivered to St. Louis Public Library by the aforementioned time, or if any such policies are canceled, the St. Louis Public Library shall have the right to terminate a Vendor Agreement immediately and/or deny Proposer access to St. Louis Public Library facilities. These insurance provisions are minimum requirements and shall not relieve Proposer of its indemnity, defense and hold harmless obligations.

I. **<u>E-Verify</u>**. The Proposer must agree to enroll in and participate in the E-Verify Program as required by Section 285.530 of the Missouri Revised Statutes, as amended, during the hiring process for all employees hired after the date of a Vendor Agreement. The Proposer must agree to require its subcontractors who may perform work under a Vendor Agreement to certify to Proposer that the subcontractor does not knowingly employ or contract with an unauthorized alien and that the subcontractor has enrolled and is participating in the Verify program. The Proposer must agree to maintain this certification throughout the duration of the term of a contract with a subcontractor. The St. Louis Public Library may terminate a resulting Vendor Agreement for default if the Proposer fails to cure a breach of these E-Verify provisions no later than thirty (30) days after being notified by the St. Louis Public Library of such breach. As a condition to entering into a Vendor Agreement, the Proposer must execute the E-Verify Affidavit, which shall be an exhibit to a Vendor Agreement. Such affidavit shall be in the form attached to this RFP as **Attachment C**.

J. **Performance Uninterrupted**. Proposer shall perform the Services without interruption except as provided herein. The decision whether to postpone or excuse the performance of the Proposer shall be in sole discretion of the St. Louis Public Library.

K. **Communications.** The Proposer shall communicate regularly or on an agreed upon schedule with the designated St. Louis Public Library management to provide updates regarding the Services performed. The Proposer shall correct all deficiencies within forty-eight (48) hours after being notified by designated St. Louis Public Library management.

L. **Personnel.** Proposer shall provide competent, capable, trained, experienced, and suitably qualified personnel to fulfill its obligations and provide the Services in a public St. Louis Public Library environment under a Vendor Agreement. Proposer shall supervise and coordinate the work of its employees and approved subcontractors, if any, and shall be responsible for and liable to St. Louis Public Library for the work of its employees and approved subcontractors. Any employee, representative, or approved subcontractor of Proposer who, in the opinion of the St. Louis Public Library, is unqualified, or unsuitable to perform the required services or who does not perform his or her work in a proper and skillful manner, or is disrespectful, or otherwise objectionable, shall, at the request of the St. Louis Public Library in its sole discretion, be reassigned or removed from performing any further duties related to the Services to be provided under a Vendor Agreement. In the performance of the Services under a Vendor Agreement, Proposer and its staff shall comply with the St. Louis Public Library's Policy for Appropriate Use of the Library, as may be amended from time to time.

M. **Laws & Ordinances**. Proposer shall comply with and observe all applicable federal, state and local laws, ordinances and regulations relating to its operation and Services under a Vendor Agreement at Central Library.

N. **Timing**. The successful Proposer must be ready to begin services no later than thirty (30) days after date of contract execution.

O. **Compliance with Laws**. The selected Proposer shall operate in compliance with all applicable local, state and federal laws, regulations and ordinances and in accordance with the Library's Policies and Procedures as may be amended from time to time. It is the Proposer's sole responsibility to obtain and maintain all appropriate licenses and permits for its operation in the performance of the Services.

III. AWARD

In accordance with the St. Louis Public Library Procurement Policy:

A. The right is reserved by the Library to cancel the RFP or to reject in whole or in part when it is for good cause and in the best interests of the Library any and all Proposals and to waive any irregularity or informality with respect to any Proposal. The Library reserves the right to split awards, make multiple awards and to reject all Proposals.

B. Discussions may be conducted with responsible Proposers who submit Proposals determined to be reasonably susceptible of being selected for award for the purpose of clarification to assure full understanding of, and conformance to, the RFP requirements. Proposers shall be accorded fair and equal treatment with respect to any opportunity for discussion and revision of Proposals and such revisions may be permitted after submissions and prior to award for the purpose of obtaining best and final offers. In conducting discussions, there shall be no disclosure of the identity of competing Proposers or of any information derived from Proposals submitted by competing Proposers.

C. Subject to the terms of this RFP, an award will be made by the Libraryto the responsible Proposer whose Proposal is determined in writing to be the most advantageous to the Library, taking into consideration price and the evaluation factors set forth in the RFP. No other factors or criteria shall be used in the evaluation.

D. The selected Proposer shall enter into a Vendor Agreement consistent with this RFP.

IV. EVALUATION CRITERIA

The award will be made based on an evaluation of each of the 4 sections below. The Respondent with the highest point total, out of 100 points, will be considered the awarded contractor. The final selection will be at the discretion of the St. Louis Public Library, and in the best interest of the Library. The Library will evaluate RFP responses using these criteria.

- **[40%] Cost**- Provide an itemized quote of all costs related to each component of the scope of work.
- **[20%] Project Timeline**- Provide a project timeline showing all project tasks, their sequence, durations, and dependencies from start to finish.
- **[20%] Project Approach**- Provide a comprehensive plan for completion of the scope of work.
- **[20%] Company Profile/Experience**– Provide detailed information describing your company's qualifications in providing services as requested in the scope of work.

ATTACHMENT A

RFP 26-009500
MACHACEK BRANCH REPAIRS

SCOPE OF WORK

Project Summary

The Work shall be performed in accordance with the Contract Documents, including the Construction Specifications attached hereto as **Attachment B** and the Construction Drawings attached hereto as **Attachment C**. Proposers shall review all attachments and incorporate all requirements, conditions, materials, labor, coordination, and construction activities necessary to complete the Work as described therein into their Proposal submissions.

In general, the work of the project consists of the following:

1. Slab-on-grade at the north end of the building and in the workroom area has settled. The project will reestablish a level floor in this area using a combination of selected slab-on-grade removal areas and an overlay using a self-leveling hydraulic cement underlayment fill.
2. To facilitate floor leveling, the existing floor finishes in the area will need to be removed. The Owner will remove and abate the asbestos containing vinyl floor tiles and mastic in the workroom and kitchenette area prior to the contractor's work.
3. Removal of carpet squares in the staff room and a portion of the library is required.
4. Removal of selected non-structural metal stud wall partitions is also required to facilitate floor leveling and to replace existing crushed partitions resulting from existing concrete roof framing deflections. Reconstruction of the non-structural metal stud wall partitions with top deflection track connections will occur once floor is leveled. Existing doors, door frames, windows, and window frames will be generally re-used, unless noted otherwise.
5. The office, staff room, and kitchenette area will be reconstructed with new commercial grade luxury vinyl tile flooring in the staff room and kitchenette area, new cabinetry, sink, faucet, and laminate countertops in the kitchenette, new ceilings, lighting, and mechanical fixtures in the office, staff room and kitchenette areas.
6. The Owner will remove existing shelving and workbenches in the workroom prior to the contractor's work. After floor leveling, the workroom will receive new commercial grade luxury vinyl tile flooring. The contractor will install new cabinets, sink, faucet, and laminate countertops in the workroom. The color, layout, and placement to be coordinated with the Owner.
7. The existing accordion door in the multi-purpose room will be demolished and replaced with a new non-structural metal stud partition with top deflection track connections.
8. The existing abandoned underfloor return air ducts that are throughout the space will be infilled with controlled low-strength materials (CLSM), commonly known as flowable fill.
9. Cracks atthe existing roof structure require sounding along existing cracks, removal and replacement of any delaminated concrete and any corroded reinforcing bars.
10. Cracks at the interior and exterior of selected exterior walls require epoxy injection.

ATTACHMENT B

St. Louis Public Library LLC
Machacek Branch Library Repairs

6424 Scanlon Avenue
St. Louis, MO 63139

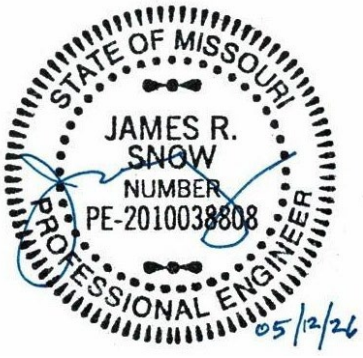
Specifications

ISSUED FOR CONSTRUCTION
May 12, 2026

Prepared by:

ABS Consulting
1701 City Plaza Drive
Spring, Texas 77389
Project No. 5632449

ABS Consulting



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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work by Owner.
4. Access to site.
5. Coordination with occupants.
6. Work restrictions.
7. Specification and drawing conventions.

B. Related Section:

1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: St. Louis Public Library Machacek Branch Library Repairs.

B. Project Location: 6424 Scanlan Avenue, St. Louis, Missouri 63139.

C. Owner: St. Louis Public Library LLC, 1415 Olive St, St. Louis, Missouri 63103.
1. Owner's Representative: Jim Ruesing, Manager of Facilities & Maintenance, Office: (314) 241-0610 x2610, Mobile: (314) 240-2234, jruesing@slpl.org.

D. Engineer: ABS Consulting, 1701 City Plaza Drive, Spring, Texas 77389
1. Engineer’s Representative: Jim Snow, P.E., S.E., Principal Engineer, Mobile: 636-875-0118, jsnow@absconsulting.com.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and generally consists of the following:

1. Slab-on-grade at the north end of the building and in the workroom area has settled. The project will reestablish a level floor in this area using a combination of selected slab-on-grade removal areas and an overlay using a self-leveling hydraulic cement underlayment fill.

2. To facilitate floor leveling, the existing floor finishes in the area will need to be removed. The Owner will remove and abate the asbestos containing vinyl floor tiles and mastic in the workroom and kitchenette area prior to the contractor's work.

3. Removal of carpet squares in the staff room and a portion of the library is required.

4. Removal of selected non-structural metal stud wall partitions is also required to facilitate floor leveling and to replace existing crushed partitions resulting from existing concrete roof framing deflections. Reconstruction of the non-structural metal stud wall partitions with top deflection track connections will occur once floor is leveled. Existing doors, door frames, windows, and window frames will be generally re-used, unless noted otherwise.

5. The office, staff room, and kitchenette area will be reconstructed with new commercial grade luxury vinyl tile flooring in the staff room and kitchenette area, new cabinetry, sink, faucet, and laminate countertops in the kitchenette, new ceilings, lighting, and mechanical fixtures in the office, staff room and kitchenette areas.

6. The Owner will remove existing shelving and workbenches in the workroom prior to the contractor's work. After floor leveling, the workroom will receive new commercial grade luxury vinyl tile flooring. The contractor will install new cabinets, sink, faucet, and laminate countertops in the workroom. The color, layout, and placement to be coordinated with the Owner.

7. The existing accordion door in the multi-purpose room will be demolished and replaced with a new non-structural metal stud partition with top deflection track connections.

8. The existing abandoned underfloor return air ducts that are throughout the space will be infilled with controlled low-strength materials (CLSM), commonly known as flowable fill.

9. Cracks atthe existing roof structure require sounding along existing cracks, removal and replacement of any delaminated concrete and any corroded reinforcing bars.

10. Cracks at the interior and exterior of selected exterior walls require epoxy injection.

B. Type of Contract

1. Project will be constructed under a single prime contract.

1.5 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

B. Preceding Work: Owner will perform the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.

1. Owner will demo and dispose of existing cabinetry and countertop in the kitchenette area.

2. Owner will demo and dispose of existing workbenches, high-density shelving units, and floor-mounted rails. Owner will remove and retain contents.

3. Owner will remove and retain existing contents and wall-mounted fixtures/furnishings in the office and staff room spaces.

4. Owner will demo existing vinyl time flooring in the kitchenette area and workroom. The floor tiles and mastic have tested positive for asbestos. A licensed asbestos abatement contractor will fully abate the asbestos-containing materials, following all necessary precautions.

5. Owner will remove and retain existing IT rack for reinstallation by Owner.

6. Owner will purchase and install new shelving/desks in the workroom area, unless otherwise noted.

7. Under a separate contract, the Owner is replacing the existing HVAC units in the rooftop penthouse. Some coordination between the HVAC contractor and this project may be required.

1.6 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

B. On-Site Work Hours: Limit work in the existing building to hours directed by Owner.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
   1. Obtain Owner's written permission before proceeding with utility interruptions.

D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.

E. Controlled Substances: Use of tobacco products and other controlled substances on the project site is not permitted.

F. Employee Identification: Provide identification tags for Contractor personnel working on the Project site. Require personnel to utilize identification tags at all times.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012100 - ALLOWANCES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Administrative and procedural requirements for allowances associated with the project.

1.2 RELATED SECTIONS

A. Section 011000 – Summary of Work

B. Section 012200 – Unit Prices

1.3 DEFINITIONS

A. Allowance: An amount, established in Article 1.5 of this Section, to be included in the base proposal price by the proposing contractor. The allowance shall be used as a mechanism to pay for costs associated with the work described in the allowance schedule, including those items identified in Section 012200.

1.4 ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS

A. The allowance amount shall be used for payment of costs associated with work included in the allowance schedule. Upon identification of such an item, inform the Owner and Engineer immediately.

B. Request for authorization to proceed with work outside of project scope must be submitted to the Owner for review and approval. Prepare a written summary of the work to be performed, following the procedures established by the Owner. At a minimum, the written summary shall include the following:
   1. If proposed work includes unit price work identified in Section 012200, identify the unit price work to be performed, the measured amount to be included, the cost of the work per measured unit, and the total cost of work. If work to be performed is outside of the items identified in Section 012200, provide a written summary of the proposed work, including material, labor, overhead, profit, and other costs necessary to complete the work.
   2. Identify the amount of project allowance used to date, and the amount of allowance remaining for the project.
   3. Include additional information, if requested by the Owner. Such additional information may include quotes or proposals submitted by subcontractors or material suppliers.

C. Expenditures from the allowance are considered modifications to the original scope of work. The Owner shall determine what changes in the work are paid for using the allowance. Do not begin work outside of project scope prior to receipt of authorization from the Owner.

D. The Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of the allowance, and to have this work measured, at Owner’s

expense, by an independent surveyor acceptable to the Contractor.

1.5 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Contractor shall include in their proposal price an allowance of $6,000.00 (Six Thousand Dollars) for new cabinetry/countertops in Kitchenette and Workroom spaces, including cabinets, sink, faucet, and laminate countertops in both rooms.

B. Allowance No. 2: Contractor shall include in their proposal price an allowance of $9,500.00 (Nine Thousand Five Hundred Dollars) for new metal double door in the new partition wall in the Multi-Purpose room and a new metal door into the Workroom.

1.6 RETURN OF UNUSED ALLOWANCE

A. Upon completion of project work, the Contract Price shall be adjusted by modification to provide the difference, if any, between the approved amount of authorized expenditures and the original amount of the allowance. The Contractor is not entitled to any portion of the allowance not appropriated or used.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

SECTION 012200 - UNIT PRICES

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for submission of unit prices to the Owner with Proposal.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other specification Sections.

1.2 DEFINITIONS

A. Unit price: A unit price is an amount proposed by bidders, stated within the Proposal, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.

B. Extent of Unit Price Work:
   1. Determine the full extent of Work affected by proposed unit prices.
   2. Coordinate related work and modify surrounding work to integrate the Work of each unit price.
      a. Include as part of each unit price, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the unit price.

C. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

D. The Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner expense, by an independent surveyor acceptable to Contractor.

1.4 SUBMISSION REQUIREMENTS

A. Submission Form: Complete Schedule of Unit Prices below and attach to the Proposal.

B. Schedule: A "Schedule of Unit Prices" is included in the following Article. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each unit price.

1.5 SCHEDULE OF UNIT PRICES

NOTE: Refer to Plan Note #2 on Sheet S2.1 and Elevation Note #2 on Sheet S3.0 for for concrete repair quantities to be included in the base bid cost.

A. Unit Price No. 1: Underside slab delamination partial-depth repair as indicated in Plan Note #2 on Sheet S2.1 and shown in Detail 1/S3.2 and 3/S3.2 (assume 3" deep repair)

If Quantity Added:_____dollars (per square foot).

If Quantity Deducted:_____dollars (per square foot).

B. Unit Price No. 2: Epoxy injection of wall cracks as indicated in Elevation Note #1 on Sheet S3.0 and shown in Detail 1/S3.2

If Quantity Added:_____dollars (per linear foot).

If Quantity Deducted:_____dollars (per linear foot).

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Requests for Information (RFIs).
4. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Sections:
1. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.3 DEFINITIONS

A. RFI: Request from Owner, Engineer, or Contractor seeking information from each other during construction.

1.4 COORDINATION

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

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

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

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

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

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

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 REQUESTS FOR INFORMATION (RFIs)

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

1. Engineer will return RFIs submitted to Engineer by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

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

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Engineer.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Requested latest response date.

14. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow five working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Engineer's actions on submittals.
    f. Incomplete RFIs or inaccurately prepared RFIs.

2. Engineer 's action may include a request for additional information, in which case Engineer 's time for response will date from time of receipt of additional information.
3. Engineer 's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Enginer and Owner in writing within 10 days of receipt of the RFI response.

1.6 PROJECT MEETINGS

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

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

B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. .Critical work sequencing and long-lead items.

c. Designation of key personnel and their duties.
d. Lines of communications.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for processing Applications for Payment.
h. Distribution of the Contract Documents.
i. Submittal procedures.
j. Use of the premises and existing building.
k. Work restrictions.
l. Working hours.
m. Owner's occupancy requirements.
n. Responsibility for temporary facilities and controls.
o. Procedures for moisture and mold control.
p. Procedures for disruptions and shutdowns.
q. Construction waste management and recycling.
r. Parking availability.
s. Office, work, and storage areas.
t. Equipment deliveries and priorities.
u. First aid.
v. Security.
w. Progress cleaning.

4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

Progress Meetings: Conduct progress meetings at **regular** intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner**,** and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Access.
        6) Site utilization.
        7) Temporary facilities and controls.

8) Progress cleaning.
9) Quality and work standards.
10) Status of correction of deficient items.
11) Field observations.
12) Status of RFIs.
13) Status of proposal requests.
14) Pending changes.
15) Status of Change Orders.
16) Pending claims and disputes.
17) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections:

1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.3 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mils (0.25 mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84.

B. Dust Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

E. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust containment devices.
2. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

F. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
1. Connect temporary service to Owner's existing power source, as directed by Owner.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Substantial Completion inspection is scheduled. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

C. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

3. Maintain and touchup signs so they are legible at all times.

D. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

F. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Division 01 Section "Summary."

B. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

C. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, other construction operations, and similar activities.

E. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Execution."

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request.

Engineer will notify Contractor of findings of review of proposed comparable product request within ten days of receipt of request, or five days of receipt of additional information or documentation, whichever is later.

a. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on

product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
5. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will notbe considered.

4. Manufacturers:

    a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Selection Specification: Where Specifications include the phrase "as selected by Owner's Representative from manufacturer's full range" or similar phrase, select a product that complies with requirements. Owner's Representative will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 017300 - EXECUTION

PART 1 – GENERAL

1.1 CLEANING

A. Cleaning During Construction:
   1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
   2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
   3. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
   4. Collect and remove waste materials, debris, and rubbish from site as specified in the Environmental Compliance and Management Plan as required in Section 017419 - Construction Waste Management and Disposal.

B. Final Cleaning:
   1. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.
   2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.
   3. Complete following cleaning operations before requesting Owner inspection for Substantial Completion.
      a. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
      b. Remove tools, construction equipment, machinery and surplus material from Project Site.
      c. Remove snow and ice to provide safe access to building.
      d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
      f. Broom clean concrete floors in unoccupied spaces.
      g. Provide final cleaning, waxing, and buffing of resilient tile, in accordance with manufacturer's requirements.
      h. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.
      i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
      j. Remove labels that are not permanent labels.
      k. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that can not be satisfactorily repaired or restored, or

that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.

l. Wipe surfaces of mechanical and electrical equipment, and other similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.

m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

n. Replace air disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.

o. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.

p. Leave Project clean and ready for occupancy.

4. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.

5. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.

6. Where extra materials of value remain after completion of construction, they become Owner’s property and these materials should be stored as directed by Owner.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections:
1. Division 02 Section "Selective Structure Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

C. Lighting Fixtures: Separate lamps by type and protect from breakage.

D. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.2 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

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SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Procedures for demolition and removal of existing building elements.
   2. Removal of designated building equipment and fixtures.
   3. Salvaged material.

B. Related Documents: The Contract Documents, as defined in Section 011000- Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. Division 01 General Requirements.

1.2 SYSTEM DESCRIPTION

A. The extent of Selective Demolition Work is that Work necessary and required to facilitate the new construction indicated.

B. Demolition shall be such that all construction, new and existing, can be performed, and completed in accordance with the construction documents.

C. The contractor shall visit the project site and familiarize himself with the existing conditions and project requirements.

D. Verify the scope of the Work under this Section including salvage material. Contractor will be responsible for removing all materials which Owner wishes to salvage prior to the beginning of this Work.

1.3 QUALITY ASSURANCE

A. Engage only personnel who can demonstrate not less than five years successful experience in Work of similar character.

B. Performance Criteria:
   1. Requirements of Structural Work: Do not cut structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio.
   2. Operational and Safety Limitations: Do not cut operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in a manner intended or resulting in a decreased operational life, increased maintenance or decreased safety.
   3. Visual Requirements: Do not cut work which is exposed on the exterior or exposed in occupied spaces of the building in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the demolition work judged by the Engineer to be cut and patched in a visually unsatisfactory manner.

4. Loading: Do not superimpose loads at any point upon existing structure beyond design capacity including loads attributable to materials, construction equipment, demolition operations and shoring and bracing.
5. Vibration: Do not use means, methods, techniques or procedures which would induce vibration into any element of the structure without prior review and permission by both Owner and Structural Engineer.
6. Fire: Do not use means, methods, techniques or procedures which would produce any fire hazard unless otherwise approved by Owner.
7. Water: Do not use means, methods, techniques or procedures which would produce excessive water run-off, and water pollution.
8. Air Pollution: Do not use means, methods, techniques or procedures which would produce uncontrolled dust, fumes or other damaging air pollution.

1.4 PROJECT SITE

A. Indicated "Existing Construction" was obtained from existing drawings or other information which may not reflect actual conditions. The Contractor shall verify all existing conditions and notify the Owner of discrepancies before proceeding with the Work.

B. Perform the removal, cutting, drilling, etc., of existing work with extreme care, and using small tools in order not to jeopardize the structural integrity of the building.

C. Occupancy: Contractor shall have full use of the facility during construction.

D. Condition of Structure: The Owner assumes no responsibility for the actual condition of portions of the structure to be demolished.

E. Partial removal: Items of salvageable value to the Contractor may be removed from the structure as the work progresses if not claimed by Owner. Salvaged items must be transported from the site as they are removed.

F. Protection: Make sure that the safe passage of persons around the area of demolition is maintained during the demolition operation. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

1.5 PROTECTION OF EXISTING CONSTRUCTION

A. Provide temporary protection of existing construction (floors, roof, and walls) when adjoining new work and in traffic areas.

B. Provide temporary construction, constructed of framing and plywood, to protect existing construction and surrounding surfaces from damage by movement of materials and personnel.

C. The contractor is responsible for all damage to existing structure and shall replace or repair all areas of damage.

D. Repair, replace, or rebuild existing construction as required or as directed which has been removed, altered or disrupted to allow for new construction. Existing construction shall be corrected to match adjacent construction, new or existing.

E. Perform cutting of existing concrete construction with saws and core drills. Jack-hammers may be used. Do not use explosives.

1.6 SHORING AND BRACING

A. Provide temporary shoring of existing construction to allow removal of existing structural elements. Maintain shoring until new structural elements are in place and accepted.

PART 2 - PRODUCTS

2.1 SALVAGED MATERIALS

A. Removed and salvaged materials of value not designated for reinstallation, unless claimed as salvage by Owner, shall become the property of the Contractor and shall be removed from the premises by the Contractor and recycled, reused or disposed of as specified in Section 01749 - Construction Waste Management and Disposal.

2.2 SALVAGED ITEMS FOR RE-USE

A. Materials and items scheduled for re-use which are damaged by the contractor to the extent which they cannot be re-used shall be replaced by the Contractor at no additional cost to the Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 PREPARATION

A. Temporary Support: Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work.

B. Provide adequate protection of other work during selective demolition to prevent damage, falling and other hazards to personnel, and provide protection of the work from adverse weather exposure.

3.3 PROCEDURE

A. Employ only skilled tradesmen to perform selective demolition.

B. Cut work by methods least likely to damage work to the retained and work adjoining.

C. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.

D. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

E. Where selective demolition terminates at a surface or finish to remain, completely remove all traces of material selectively demolished, including mortar beds. Provide smooth, even, substrate transition.

3.4 POLLUTION CONTROLS

A. Use temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level.

B. Comply with governing authorities pertaining to environmental protection.

C. Clean adjacent portion of the structure and improvement of dust, dirt and debris caused by demolition operations, as directed by Owner and governing authorities. Return adjacent areas to conditions existing prior to the start of the work.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Collect, recycle, reuse, and dispose of demolished materials as specified in Section 017419 - Construction Waste Management and Disposal.

3.6 SCHEDULE OF SELECTIVE DEMOLITION

A. Deteriorated Roof Slab and Joists:
   1. Where indicated, sound concrete at all indicated cracks, remove all loose and delaminated concrete back to sound concrete on the underside of the roof structure.
   2. Dislodge concrete to be removed with as little vibration and impact on the supporting structure into portions as large as practical for removal.
   3. Remove all concrete pieces within removed area back to solid concrete .

B. Corroded Reinforcing Steel:
   1. Where indicated, remove all corroded reinforcing steel back to location of uncorroded steel in roof slab and joists of the roof structure.

C. Interior Floor Finishes:
   1. The Owner will remove all existing interior floor vinyl tile finish material in the kitchenette area and in the workroom area. The floor tile and mastic have tested positive for asbestos. A licensed asbestos abatement contractor will fully abate the asbestos-containing materials, following all necessary precautions.
   2. Remove and retain existing carpet squares where indicated on the drawings.

D. Interior Walls and Partitions and Ceilings:

1. Remove existing interior wall and partitions where indicated on the drawings.
2. Remove all top and bottom framing tracks and overhead braces.
3. Remove existing accordion door partition and any associated hardware and trimwork in the multi-purpose room.
4. Remove existing gypsum board ceilings and associated lighting and mechanical registers where indicated on the drawings.

E. Provide selective demolition as indicated and required by the Contract Documents and as required for indicated repair work.

END OF SECTION

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SECTION 030130 - CONCRETE REHABILITATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Removal of deteriorated concrete and subsequent replacement and patching.
2. Epoxy crack injection.

1.2 RELATED SECTIONS

A. Section 012200 – Unit Prices

B. Section 016000 – Product Requirement

C. Section 031000 – Concrete Forming and Accessories

D. Section 032000 – Concrete Reinforcement

E. Section 033000 – Cast-in-place Concrete

F. Related Documents: The Contract Documents, as defined in Section 011000 – Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.3 UNIT PRICES

A. Work of this Section is affected by unit prices specified in Section 012200 "Unit Prices."

1. Unit prices apply to authorized work covered by estimated quantities.
2. Unit prices apply to authorized additions to and deletions from the Work as authorized by Change Orders.

B. General: Unit prices include the cost of preparing existing construction to receive the work indicated and costs of field quality control required for units of work completed.

C. All quantities and costs associated with the cleaning and adjustment of existing reinforcement are incidental and shall be included in the unit price for the Work. Unit prices provided for replacement of reinforcement shall apply only to bars in need of replacement due to section loss caused by corrosion or bars added at the discretion of the Engineer. Replacement of bars for other reasons shall not be billed to the Owner

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at the project site.

1. Review methods and procedures related to concrete maintenance including, but not limited to, the following:

    a. Verify concrete-maintenance specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    b. Materials, material application, sequencing, tolerances, and required clearances.
    c. Quality-control program.
    d. Coordination with building occupants.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

2. Submit product data for the following:
    a. Bonding Agents
    b. Packaged Repair Material
    c. Corrosion Inhibitor
    d. Form Release Agent
    e. Admixtures
    f. Epoxy-Coating Repair Material

B. Curing CompoundsRepair Materials:

1. Ready Mixed/Site Batch Concrete: Submit all proposed concrete mixture designs for use on the project. Mixture design submittals shall include trial-batch test results or historical test data for the specific mixture proposed. All components of ready mixed and site batched concrete shall be listed.

2. Packaged Materials: Packaged material submittals shall include all relevant manufacturers' literature, including technical data. Submit data on materials and limitations where aggregate extension is planned. Include MSDS for all materials submitted

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: Submit documentation demonstrating conformance with the qualification requirements for the concrete repair Contractor and the foreman for the concrete repair Contractor as described in the Quality Assurance section.

B. Material Certificates: For each type of Portland cement, aggregate, or other materials supplied for mixing or adding to products at Project site.

C. Product Test Reports: For each material used, such as manufactured bonding agent, cementitious patching mortar, joint-filler, crack-injection adhesive, polymer sealer, and composite structural reinforcement, for tests performed by manufacturer and witnessed by a qualified testing agency.

D. Field quality-control reports.

E. Quality-Control Program: Submit before work begins.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: The manufacturer of the specified product shall have a program for training, certifying and technically supporting a national Approved Contractor Program for a minimum of 10 years. The manufacturer shall also be certified as meeting the ISO 9000 Quality Standard at all facilities producing the specified product. Manufacturer shall employ factory-authorized service representatives who are available for consultation and Project-site inspection and on-site assistance

B. Subcontractor Qualifications: Engage an experienced concrete-maintenance firm (Subcontractor) that employs installers and supervisors who are trained and approved by manufacturer to apply the specified products to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.

1. Field Supervision: Concrete-maintenance specialist firm shall maintain experienced full-time supervisors on Project site during times that concrete-maintenance work is in progress.

C. Adhesive Anchor Installer Qualifications: Specialist in installation of adhesively-set anchors in concrete who is certified as an Adhesive Anchor Installer through a qualifying ACI/CRSI-sanctioned testing and certification program.

D. Quality-Control Program: Prepare a written plan for concrete maintenance to systematically demonstrate the ability of personnel to properly perform maintenance work, including each phase or process, protection of surrounding materials during operations, and control of debris and runoff during the Work. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work.

E. Notify the Engineer for scheduling purposes at least 24 hours in advance of when repair locations are ready for repair material placement and allow adequate time for inspection. Schedule all inspection Work with the Engineer. Any Work covered up without inspection is subject to rejection by the Engineer.

F. Provide and maintain a facility or location for the safe storage and proper curing of freshly cast test specimens. The temporary storage area and access for the testing agency to perform concrete testing during placement shall comply with the requirements of ASTM C31/C31M

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the project site in the manufacturer’s original and unopened containers, label intact with type and name of products and manufacturers.

B. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

C. Store materials off the ground, under cover, and in a dry location. Protect from rain, water, freezing, excessive heat, foreign matter, and other damaging conditions until ready for use. If materials have frozen, obtain manufacturer’s written approval prior to use. Do not stir liquids or mix materials until they are completely thawed. Do not force-thaw materials. Do not use damaged containers or broken bags.

D. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.9 FIELD CONDITIONS

A. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.

B. Existing Electrical, Plumbing, and Mechanical Services:

1. Protect all electrical conduits, boxes, wiring, and fixtures from damage. Safe removal of lighting fixtures and existing surface mounted electrical lines, when required, shall be the responsibility of the Contractor. All electrical lines shall be reattached to the structure after completion of the repairs.

2. Take reasonable precautions to avoid damaging embedded electrical conduits. Reasonable precautions shall include, but are not limited to, reviewing existing documentation and connected services in combination with nondestructive testing to determine the layout of the conduit. Demolition equipment shall be selected to minimize damage to conduit. Damage to embedded conduits as a result of Contractor negligence shall be repaired by the Contractor at no cost to the Owner.

3. Protect mechanical ductwork from the intake of dust particles and odor.

4. Protect plumbing, mechanical equipment, and ductwork from damage. Safe removal of plumbing, mechanical equipment, and ductwork, when required, shall be the responsibility of the Contractor. All plumbing, mechanical equipment, and ductwork shall be reattached to the structure after completion of the repairs.

5. Maintain electrical, plumbing, and mechanical services in continuous operation except as approved by the Owner.

C. Cold-Weather Requirements for Cementitious Materials: Comply with the following procedures:

1. When air temperature is below 40 deg F (5 deg C), heat patching-material ingredients and existing concrete to produce temperatures between 40 and 90 deg F (5 and 32 deg C).
2. When mean daily air temperature is between 25 and 40 deg F (minus 4 and plus 5 deg C), cover completed Work with weather-resistant insulating blankets for 48 hours after repair or provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.
3. When mean daily air temperature is below 25 deg F (minus 4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.

D. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F (32 deg C) and above.
1. ACI 305R-10, “Hot Weather Concreting”, lists practices for hot weather concreting, including but not limited to the following:
   a. Minimizing the time to transport, place, consolidate and finish the concrete.
   b. Protecting the concrete from moisture loss during placing and curing periods.
2. Monitor environmental factors such as temperature, humidity, and wind speed to estimate the evaporation rate of surface moisture as recommended in ACI 305R-10. Wind speed should be monitored at 20 inches above the evaporating surface.

3. When the evaporation rate is expected to approach the bleeding rate of the concrete, precautions should be taken as detailed in ACI 305R-10, Chapter 6. For concrete mixes containing fly ash or similar admixtures, a very low bleeding rate of 0.05 lb/ft2/hr should be used as a limit on the surface evaporation rate. Refer to ACI 305R-10 for other methods for estimating the evaporation rate of surface moisture.
4. Reduce the lag time between concrete load deliveries to the job site and provide a representative at the concrete pump to coordinate load deliveries. One truck needs to be queued up at the concrete pump by the completion of dumping each previous load into the concrete pump's hopper to avoid delays in concrete placement.
5. Provide additional measures as noted in ACI 305R-10 to reduce evaporation, such as temporary wind breaks, shade, fogging and/or other required measures.
6. Apply an evaporation retarder, such as AquaFilm, to the fresh concrete surface immediately after striking off and bull floating to reduce evaporation before final finishing, and again immediately after finishing prior to sawcutting.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Select appropriate means and methods of concrete removal, cleaning of reinforcement, and preparation of the concrete substrate as defined in these specifications. The following equipment or approved equivalent are permitted to be used.

1. Chipping hammers with a total weight not to exceed:

    a. 30 lb (13.6 kg) and equipped with appropriate chipping bits for initial demolition of repair areas. 30 lb (13.6 kg) chipping hammers may be used at full-depth repairs. In no case shall they be used to extend removal further than 2 in. (50.8 mm) from the bond line for a repair.
    b. 15 lb (6.8 kg) with sharp pointed tools for the removal of concrete from partial-depth repairs, beneath reinforcing bars and around repair edges.

2. Dry abrasive blast cleaning equipment capable of removing rust from the exposed steel reinforcement and cleaning the surface of the exposed concrete substrate. Cleaning shall include the removal of damaged paste and aggregate.

3. Pressure-washing equipment capable of delivering at least 3000 psi (20.7 MPa) nozzle pressure for cleaning loose material from repair areas.

4. Water-blasting equipment capable of delivering pressures of 5000 psi (34.5 MPa) to 10,000 psi (69 MPa) for concrete surface preparation.

5. Compressed air equipment capable of delivering compressed air free of oil for cleaning loose material from repair areas.

6. Adjustable depth concrete saw for saw cutting the edges of repair areas.

2.2 MANUFACTURERS

A. Source Limitations: For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.

2.3 BONDING AGENTS

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Manufactured product that consists of water-insensitive epoxy adhesive, Portland cement, and water-based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Dayton Superior; Perma Prime 3C, Unitex Pro-Poxy Cembond or a comparable product by one of the following:

    a. BASF Corporation-Construction Systems.
    b. Euclid Chemical Company (The); an RPM company.
    c. Sika Corporation.

B. Scrub Coat: Mixed patching material hand- or spray-applied to the properly conditioned repair surface, in lieu of bonding agent only where indicated on drawings, as recommended by manufacturer.

2.4 PATCHING AND REPAIR MATERIALS, GENERAL

A. Patching Mortar Requirements:

1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.
2. Coarse Aggregate for Patching Mortar: ASTM C 33/C 33M, washed aggregate, Size No. 8, Class 5S. Add to patching-mortar mix only as permitted by patching-mortar manufacturer.

2.5 PATCHING AND REPAIR MATERIALS MANUFACTURERS

A. Basis-of-Design Manufacturer: Product names specified herein are manufactured by Dayton Superior Corporation. Equivalent products, meeting the specified requirements and salient features of specified products, manufactured by one of the named Acceptable Alternative Manufacturers are acceptable.

B. Acceptable Alternative Manufacturers: Subject to compliance with requirements, the following manufacturers are acceptable alternatives to the basis-of-design manufacturer:

1. BASF Construction Chemicals - Construction Systems.
2. Euclid Chemical Company (The); an RPM company.
3. L&M Construction Chemicals, Inc.
4. Sika Corporation.

2.6 GENERAL USE REPAIR MORTARS

A. Unmodified Cementitious Patching Mortar: Packaged, dry mix for repair of concrete.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Dayton Superior; 20 Minute.
2. Compressive Strength: Not less than 6500 psi (44.8 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Rapid-Strengthening, Polymer-Modified Cementitious Patching Mortar: Packaged, dry mix shrinkage-compensated, polymer-modified, ASTM C 928/C 928M for vertical, overhead, and horizontal repair of concrete.

1. Basis-of-Design Product: Dayton Superior; Polyfast FS.
2. Compressive Strength: Not less than 1000 psi (7.0 MPa) within three hours, and 9000 psi (62.1 MPa) after 28 days when tested according to ASTM C 109/C 109M.
3. Bond Strength: Not less than 5100 psi (35.1 MPa) within 7 days, when testd in accordance with ASTM C 1042.
4. Flexural Strength: Not less than 2000 psi (13.8 MPa) within 28 days, when tested in accordance with ASTM C 348.

2.7 FORM-AND-POUR REPAIR MORTARS

A. Form-and-Pour Cementitious Repair Mortar, Pre-Extended: Packaged, dry mix, shrinkage-compensated Portland cement mortar, with blended coarse aggregates. Flowable consistency, able to be pumped or formed and poured.

1. Basis-of Design Product: Dayton Superior; Civil/Structural FPX.

    a. Compressive Strength: Not less than 8000 psi (55.2 MPa) after 28 days, when tested according to ASTM C 109/C 109M.
    b. Bond Strength: Not less than 1500 psi (10.3 MPa) after 28 days, when tested according to ASTM C 882.
    c. Flexural Strength: Not less than 700 psi (4.8 MPa) after 28 days, when tested according to ASTM C 78.

B. Rapid-Strengthening, Form-and-Pour Cementitious Patching Mortar: Packaged, dry mix, shrinkage-compensated, for horizontal repair of concrete; flowable consistency.

1. Basis-of-Design Product: Dayton Superior; Perma Patch FP.

    a. Compressive Strength: Not less than 1000 psi (6.9 MPa) within 3 hours, and 8500 psi (58.6 MPa) after 28 days, when tested according to ASTM C 109/C 109M.
    b. Bond Strength: Not less than 250 psi (1.8 MPa) within 7 days, when tested according to ACI 503R.
    c. Flexural Strength: Not less than 1100 psi (7.6 MPa) after 28 days, when tested according to ASTM C 78.

2.8 HORIZONTAL REPAIR MORTARS

A. Horizontal Cementitious Repair Mortar: Packaged, dry mix**,** latex-modified, for horizontal repair of concrete; flowable consistency.

1. Basis-of-Design Product: Dayton Superior; Special Patch.

    a. Compressive Strength: Not less than 1200 psi (8.3 MPa) within 3 hours, and 7000 psi (48.3 MPa) after 28 days, when tested according to ASTM C 109/C 109M.

b. Final Set; ASTM C 266: within 45 minutes at 72 deg F (22 deg C).

B. Rapid-Strengthening, Horizontal Cementitious Repair Mortar: Packaged, dry mix**,** latex-modified, ASTM C 928/C 928M, for horizontal repair of concrete; flowable consistency; extendable.

1. Basis-of-Design Product: Dayton Superior; HD 50 or Pave Patch 3000.

a. Compressive Strength: Not less than 3500 psi (24.2 MPa) within 3 hours, and 7500 psi (51.75 MPa) after 28 days, when tested according to ASTM C 109/C 109M.
b. Bond Strength: Not less than 2500 psi (17.25 MPa) within 7 days, when tested according to ASTM C 882.
c. Scaling Resistance: No scaling at 25 cycles, when tested according to ASTM C 672.
d. Freeze-Thaw Resistance: No loss at 300 cycles, when tested according to ASTM C 666.

2.9 VERTICAL AND OVERHEAD REPAIR MORTARS

A. Cementitious Structural Repair Mortar: Packaged, dry mix**,** cement-based mortar for vertical and overhead repair of concrete; trowelable consistency, with corrosion inhibitors.

1. Basis-of-Design Product: Dayton Superior; Civil/Structural VO.

a. Compressive Strength: Not less than 5500 psi (38 MPa) after 1 day, and 11,000 psi (77.2 MPa) after 28 days, when tested according to ASTM C 109/C 109M.
b. Bond Strength: Not less than 300 psi (2.1 MPa) within 7 days, when tested according to ACI 503R.
c. Flexural Strength: Not less than 1000 psi (6.9 MPa) within 28 days, when tested according to ASTM C 78.
d. Scaling Resistance: No scaling at 50 cycles, when tested in accordance with ASTM C 672.
e. Freeze-Thaw Resistance: No more than 5 percent loss at 300 cycles, when tested according to ASTM C 666.

B. Cementitious Structural Repair Mortar: Packaged, dry mix**,** cement-based mortar for vertical and overhead repair of concrete; trowelable consistency, rapid setting, shrinkage compensated.

1. Basis-of-Design Product: Dayton Superior; Perma Patch VO.

a. Compressive Strength: Not less than 4500 psi (31 MPa) after 1 day, and 8000 psi (55.2 MPa) after 28 days, when tested according to ASTM C 109/C 109M.
b. Bond Strength: Not less than 245 psi (1.7 MPa) within 7 days, when tested according to ACI 503R.
c. Flexural Strength: Not less than 1200 psi (8.3 MPa) within 28 days, when tested according to ASTM C 78.
d. Scaling Resistance: No scaling at 50 cycles, when tested in accordance with ASTM C 672.
e. Freeze-Thaw Resistance: No more than 5 percent loss at 300 cycles, when tested according to ASTM C 666.

C. Rapid-Strengthening, Vertical and Overhead Cementitious Patching Mortar: Packaged, dry mix**,** accelerated, for vertical and overhead repair of concrete; trowelable consistency.

1. Basis-of-Design Product: Dayton Superior; HD 25 VO.

a. Compressive Strength: Not less than 2400 psi (16.5 MPa) within 3 hours, and 6200 psi (42.8 MPa) after 28 days, when tested according to ASTM C 109/C 109M.
b. Bond Strength: Not less than 1100 psi (7.6 MPa) within 7 days, when tested according to ASTM C 882 (modified).
c. Flexural Strength: Not less than 1100 psi (7.6 MPa) within 28 days, when tested according to ASTM C 348.

2.10 RESINOUS REPAIR MATERIALS

A. All-weather Resinous Repair Mortar: High solids, low modulus, three-component epoxy/urethane repair mortar, formulated to cure at low temperatures.

1. Basis-of-Design Product: Dayton Superior; Rapid Resin Repair or Unitex Pro-Poxy AWP.

a. Compressive Strength: Not less than 3500 psi (24 MPa) after 28 days, when tested according to ASTM C 579.
b. Bond Strength: Not less than 2000 psi (13.7 MPa) within 7 days, when tested in accordance with ASTM C 882 (modified).
c. Cold Temperature Curing Capability: Can cure at temperatures down to -20 deg F (-29 deg C).

B. General Use Resinous Repair Mortar: 100 percent solids, low modulus, three-component, chemically resistant epoxy repair mortar, trowelable.

1. Basis-of-Design Product: Dayton Superior; Sure Patch or Unitex Pro-Poxy 2500.

a. Compressive Strength: Not less than 1500 psi (10.3 MPa) within three hours, and 7000 psi (48.3 MPa) after 24 hours, when tested according to ASTM C 579.
b. Bond Strength: Not less than 3200 psi (22.6 MPa) within 14 days, when tested in accordance with ASTM C 882.

C. Epoxy Resin Healer/Sealer: 100 percent solids, low modulus, low viscosity, penetrating epoxy polymer, for sealing surface cracks and providing a sealed concrete surface.

1. Basis-of-Design Product: Dayton Superior; Sure Seal LV/LM or Unitex Pro-Poxy 40.

a. Tensile Elongation: Not less than 80 percent, when tested according to ASTM D 638.
b. Tensile Strength: Not less than 1500 psi (10.3 MPa), when tested in accordance with ASTM D 638.

D. Epoxy Gel Anchor/Patch: 100 percent solids epoxy gel for anchoring or bonding structural components and patching structural elements, complying with ASTM C 881 and AASHTO M 235; Types I, II, IV, and V (except for minimum gel time), Grade 3, Classes B and C.

1. Basis-of-Design Product: Dayton Superior; Sure Anchor J50 or a comparable product by one of the following:

a. Hilti Corporation.
b. ITW Redhead, Inc.
c. L&M Construction Chemicals, Inc.
d. Powers Fasteners, Inc.

2. Compressive Strength: Not Less than 10,000 psi (69 MPa), when tested in accordance with ASTM D 695.
3. Concrete Bond Strength: Not less than 3600 psi (24.8 MPa) after 14 days, when tested in accordance with ASTM C 882.

E. Low Temperature Epoxy Gel Anchor/Patch: 100 percent solids epoxy gel for anchoring or bonding structural components and patching structural elements, complying with ASTM C 881 and AASHTO M 235; Types I, II, IV, and V (except for minimum gel time), Grade 3, Classes A, B, and C, with ability to cure down to -15 deg F (-26 deg C).

1. Basis-of-Design Product: Dayton Superior; All Weather J51 or Unitex Pro-Poxy 400.
2. Compressive Strength: Not Less than 10,000 psi (69 MPa), when tested in accordance with ASTM D 695.
3. Concrete Bond Strength: Not less than 3200 psi (22 MPa) after 14 days, when tested in accordance with ASTM C 882.

2.11 EPOXY CRACK-INJECTION MATERIALS

A. Epoxy Crack-Injection Adhesive: 100 percent solids, high modulus, low viscosity, moisture tolerant, epoxy polymer, for gravity feed or pressure injection of concrete cracks. ASTM C 881/C 881M, Type IV at structural locations and where indicated, Type I at other locations; free of VOCs.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Dayton Superior; Sure Inject J56 or a comparable product by one of the following:

    a. BASF Corporation-Construction Systems.
    b. Euclid Chemical Company (The); an RPM company.
    c. Sika Corporation.

2. Tensile Strength: Not less than 7000 psi (48.3 MPa), when tested in accordance with ASTM D 638.
3. Concrete Bond Strength: Not less than 3600 psi (24.8 MPa) after 14 days, when tested in accordance with ASTM C 882.
4. Capping Adhesive: Product manufactured for use with crack-injection adhesive by same manufacturer.

2.12 CORROSION-INHIBITING MATERIALS

A. Corrosion-Inhibiting Treatment: Waterborne solution of alkaline corrosion-inhibiting chemicals for concrete-surface application that penetrates concrete by diffusion and forms a protective film on steel reinforcement.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. BASF Corporation-Construction Systems.
    b. Cortec Corporation.
    c. Euclid Chemical Company (The); an RPM company.
    d. MAPEI Corporation.
    e. Sika Corporation.
    f. Evonik Industries, Protectosil CIT

2.13 MISCELLANEOUS MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I, II, or III unless otherwise indicated.

B. Water: Potable.

C. Liquid Strippable Masking Agent:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Dayton Superior; Face-Off or a comparable product by one of the following:

a. BASF Construction Chemicals.
b. Dow Corning Corporation.
c. ProSoCo, Inc.

2.14 MIXES

A. General: Mix products, in clean containers, according to manufacturer's written instructions.

1. Do not add water, thinners, or additives unless recommended by manufacturer.
2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

B. Dry-Pack Mortar: Mix required type(s) of patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

C. Concrete: Comply with Section 033000 "Cast-in-Place Concrete."

PART 3 - EXECUTION

3.1 CONCRETE MAINTENANCE

A. Have concrete-maintenance work performed only by qualified concrete-maintenance specialist.

B. Comply with manufacturers' written instructions for surface preparation and product application.

3.2 EXAMINATION

A. Notify Engineer at least 24 hours in advance of times when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.

B. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding in accordance with ASTM D 4580, mark boundaries, and arrange for the Engineer to inspect and approve the layout geometry. Layout geometry shall be performed in accordance with ICRI 310.1R. Mark areas for removal by simplifying and squaring off boundaries. At columns and walls make boundaries level and plumb unless otherwise indicated.

C. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.3 PREPARATION

A. Ensure that supervisory personnel are on-site and on duty when concrete maintenance work begins and during its progress.

B. Protect persons, motor vehicles, surrounding surfaces of building being repaired, building site, plants, and surrounding buildings from harm resulting from concrete maintenance work.

1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
2. Use only proven protection methods appropriate to each area and surface being protected.
3. Provide temporary barricades, barriers, and directional signage to exclude public from areas where concrete maintenance work is being performed.
4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of concrete maintenance work.
5. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.
6. Protect floors and other surfaces along haul routes from damage, wear, and staining.
7. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape **or** a liquid strippable masking agent. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
8. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
9. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

C. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.

1. Verify that affected utilities have been disconnected and capped.
2. Inventory and record the condition of items to be removed for reinstallation or salvage.
3. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain. Strengthen or add new supports when required during progress of removal work.

D. Reinforcing-Bar Preparation: Remove loose and flaking rust from exposed reinforcing bars by needle scaling, sand blasting or wire brushing until only tightly adhered light rust remains.

1. Where section loss of reinforcing bar is more than 25 percent, or 20 percent in two or more adjacent bars, cut bars and remove and replace as indicated on Drawings.
2. Remove additional concrete as necessary to provide at least 3/4-inch (19-mm) clearance around existing and replacement bars.
3. Splice replacement bars to existing bars according to ACI 318 (ACI 318M) by lapping, welding, or using mechanical couplings where adequate concrete cover exists over couplers.

E. Surface Preparation for Cementitious Repairs, General: Unless otherwise indicated or recommended by manufacturer, prepare concrete surfaces to receive cementitious repair materials to saturated surface dry (SSD) condition. Do not use for epoxy repairs.

3.4 CONCRETE REMOVAL

A. Do not overload structural elements with debris.

B. Saw-cut perimeter of areas indicated for removal to a depth of at least 3/8 inch . Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement.

C. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.

D. Remove additional concrete if necessary to provide a depth of removal of at least 3/4 inch over entire removal area.

E. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least 3/4-inch (19-mm) clearance around bar.

F. Test areas where concrete has been removed by tapping with hammer and remove additional concrete until unsound and disbonded concrete is completely removed.

G. Provide surfaces with a fractured profile of at least 1/8 inch (3 mm) that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.

3.5 Thoroughly clean removal areas of loose concrete, dust, and debris.BONDING AGENT APPLICATION

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Apply to reinforcing bars and concrete by stiff brush or hopper spray according to manufacturer's written instructions. Apply to reinforcing bars in two coats, allowing first coat to dry two to three hours before applying second coat. Allow to dry before placing patching mortar or concrete.

3.6 PATCHING MORTAR APPLICATION

A. Place patching mortar as specified in this article unless otherwise recommended in writing by manufacturer or where dry-pack mortar is indicated.

1. Provide forms where necessary to confine patch to required shape.
2. For cementitious mortar applications only, wet substrate and forms thoroughly and then remove standing water (SSD condition).

B. Pretreatment:
1. Apply corrosion-inhibiting treatment to prepared substrate and reinforcing bars.
2. Apply specified bonding agent and slurry coat per manufacturer’s recommendations.

C. General Placement: Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always

troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.

D. Placing in Lifts: Where conditions or design require patching materials to be placed to a total depth that exceeds maximum single-lift depth recommended by manufacturer, apply material in two or more lifts.

1. Comply with manufacturer's maximum depth recommendations for each specific product when applying in multiple lifts.

E. Consolidation: After each lift is placed, consolidate material and screed surface.

F. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.

G. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a surface matching adjacent concrete.

H. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.7 DRY-PACK-MORTAR APPLICATION

A. Use dry-pack mortar for deep cavities and where indicated. Place as specified in this article unless otherwise recommended in writing by manufacturer.

1. Provide forms where necessary to confine patch to required shape.
2. Wet substrate and forms thoroughly and then remove standing water (SSD condition).

B. Pretreatment:
1. Apply corrosion-inhibiting treatment to prepared substrate and reinforcing bars.
2. Apply specified bonding agent and slurry coat.

C. Place dry-pack mortar into cavity by hand and compact tightly into place. Do not place more material at a time than can be properly compacted. Continue placing and compacting until patch is approximately level with surrounding surface.

D. After cavity is filled and patch is compacted, trowel surface to match profile and finish of surrounding concrete. A thin coat of patching mortar may be troweled into the surface of patch to help obtain required finish.

E. Wet-cure patch for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.8 FORM-AND-POUR MORTAR APPLICATIONS

A. Form repair mortar patches and structures using tight-fitting, smooth-faced forms. Apply form release coating to interior form faces.

B. Seal forms to existing substrate to prevent bleed out and leakage at form perimeters.

C. Design formwork for either gravity feed or pressure pumping applications.

D. Apply corrosion-inhibiting treatment to prepared substrate and reinforcing bars..

E. Fill forms to completely fill voids in substrate, including around anchors, reinforcing bars, and other embedments.

F. Remove forms only after repair material has set up adequately to maintain shape without sag or deflection.

G. For flush repairs, grind perimeter of repair areas flush with adjacent surfaces. Remove overfill and bleed out.

H. Wet-cure patch for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.9 HORIZONTAL SURFACE REPAIRS AND OVERLAYS

A. Clean surfaces of repair areas prior to beginning placement, using abrasive blasting, compressed air, pressure washing, or combination of methods.

B. For horizontal patches, saw-cut perimeter edges and chip out existing material to create key.

C. Ensure substrate to receive patch/overlay is in saturated surface dry (SSD) condition, except for epoxy installations and as otherwise recommended by manufacturer.

D. Apply corrosion-inhibiting treatment to prepared substrate and reinforcing bars.

E. Prime surfaces to receive new materials, as recommended by manufacturer.

F. Apply repair material at rates recommended by manufacturer and to completely fill recesses and to result in a smooth, level surface. For recesses deeper than can be filled in a single lift, apply in multiple lifts, allowing manufacturer's recommended setting/curing time between pours.

G. Spread repair/overlay material using gauge rake, spiked roller, squeegee, or napped roller, as required for specific installation, and as recommended by manufacturer.

H. To the greatest extent possible, ensure spreading tools and methods eliminate high and low spots, air bubbles, and other imperfections.

3.10 CONCRETE PLACEMENT

A. Place concrete according to Section 033000 "Cast-in-Place Concrete" and as specified in this article.

B. Pretreatment:
   1. Apply corrosion-inhibiting treatment to prepared substrate and reinforcing bars.
   2. Apply epoxy-modified, cementitious bonding and anticorrosion agent to reinforcement and concrete substrate.

C. Standard Placement: Place concrete by form-and-pump method unless otherwise indicated.

   1. Use vibrators to consolidate concrete as it is placed.
   2. At unformed surfaces, screed concrete to produce a surface that when finished with patching mortar will match required profile and surrounding concrete.

D. Form-and-Pump Placement: Place concrete by form-and-pump method where indicated.

1. Design and construct forms to resist pumping pressure in addition to weight of wet concrete. Seal joints and seams in forms and where forms abut existing concrete.
2. Pump concrete into place from bottom to top, releasing air from forms as concrete is introduced. When formed space is full, close air vents and pressurize to 14 psi (96 kPa).

E. Wet-cure concrete for not less than seven days by leaving forms in place or keeping surfaces continuously wet by water-fog spray or water-saturated absorptive cover.

F. Fill placement cavities with dry-pack mortar and repair voids with patching mortar. Finish to match surrounding concrete.

3.11 EPOXY CRACK INJECTION

A. Clean cracks with oil-free compressed air or low-pressure water to remove loose particles.

B. Clean areas to receive capping adhesive of oil, dirt, and other substances that would interfere with bond.

C. Place injection ports as recommended by epoxy manufacturer, spacing no farther apart than thickness of member being injected. Seal injection ports in place with capping adhesive.

D. Seal cracks at exposed surfaces with a ribbon of capping adhesive at least 1/4 inch (6 mm) thick by 1 inch (25 mm) wider than crack.

E. Inject epoxy adhesive, beginning at widest part of crack and working toward narrower parts. Inject adhesive into ports to refusal, capping adjacent ports when they extrude epoxy. Cap injected ports and inject through adjacent ports until crack is filled.

F. After epoxy adhesive has set, remove injection ports and grind surfaces smooth.

3.12 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:

1. Packaged, Cementitious Patching Mortar: Randomly selected sets of samples for each type of mortar required, tested according to ASTM C 928/C 928M.
2. Job-Mixed Patching Mortar: Randomly selected sets of samples for each type of mortar required, tested for compressive strength according to ASTM C 109/C 109M.
3. Concrete: As specified in Section 033000 "Cast-in-Place Concrete."

C. Product will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

E. Manufacturers Field Service: Engage manufacturers' factory-authorized service representatives for consultation and Project-site inspection and to provide on-site assistance when requested by Engineer.

1. Have manufacturers' factory-authorized service representatives perform the following number of Project-site inspections to observe progress and quality of the Work, distributed over the period of product installation, regardless of on-site assistance requested by Engineer:

    a. Bonding-Agent and Packaged Patching-Mortar Installation: One inspection.
    b. Crack-Injection-Adhesive Preparation and Installation: One inspection.

END OF SECTION

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SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
   2. Openings for other work.
   3. Form accessories.
   4. Form stripping.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. Section 032000 - Concrete Reinforcement: Coordination between formwork and reinforcement.
   2. Section 033000 - Cast-in-Place Concrete: Supply of concrete accessories for placement by this section.

1.2 REFERENCES

A. American Concrete Institute (ACI) Codes and Standards latest editions:
   1. ACI 301 - Structural Concrete for Buildings.
   2. ACI 318 - Building Code Requirements for Reinforced Concrete.
   3. ACI 347 - Recommended Practice for Concrete Formwork.

B. United States Department of Commerce Product Standard (PS):
   1. PS 1 - Construction and Industrial Plywood.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 347.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

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

1.5 ENVIRONMENTAL REQUIREMENTS

A. Environmental Impact:

1. Formwork: Reuse forms to greatest extent possible without damaging structural integrity of concrete and without damaging aesthetics of exposed concrete.

PART 2 - PRODUCTS

2.1 WOOD FORMS

A. Forms for Exposed Finish Concrete: Plywood panels, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
   1. Plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Lumber: Construction grade; with grade stamp clearly visible.

2.2 PREFABRICATED FORMS

A. Preformed Steel Forms: Minimum 16 gage, well matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

2.3 ACCESSORIES

A. Form Ties: Factory-fabricated, removable or snap-off type, metal, of fixed or adjustable length as applicable, with cone ends. Designed to prevent form deflection and to prevent spalling concrete upon removal. Back break dimension, 1-1/2 inch from exposed concrete surface. Provide ties that, when removed, will leave holes not larger than 1-inch diameter in concrete surface.

B. Form Release Agent: 100 percent biodegradable colorless agent which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of subsequent coatings intended for use on concrete surfaces. Zero VOC.
   1. Envirolux by Conspec, Kansas City, KS, (800) 348-7351 or (913) 287-1700.
   2. SMD-10 Soy Form Release by Strategic Market Development (800) 959-1071 or (815) 935-0863.
   3. Bio-Form by Leahy-Wolf, Franklin Park, IL, (888) 873-5327 or (847) 455-5710.
   4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

C. Corners: Chamfered, wood strip 3/4 x 3/4-inch size; maximum possible lengths.

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.
   1. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with Drawings.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

3.2 FORMWORK INSTALLATION

A. Install formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 347R.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores upon approval by the Professional Engineer responsible for their design.

D. Align joints and make watertight. Furnish in largest available sizes to minimize number of joints and to conform to joint system indicated on Drawings.

E. Obtain approval from the Engineer before framing openings in structural members which are not indicated on Drawings.

F. Provide chamfer strips on external corners of concrete members, to produce uniform, smooth lines and tight edge joints.

3.3 FORM RELEASE AGENT APPLICATION

A. Apply form release agent on formwork in accordance with manufacturer's published instructions.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.4 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories in accordance with manufacturer's published instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.5 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 CONSTRUCTION

A. Site Tolerances:
1. Construct formwork to maintain tolerances required by ACI 301 and ACI 347.
2. Camber slabs and beams 1/4 inch per 10 feet in accordance with ACI 301.

3.7 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

3.8 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Do not remove shoring without approval from the Professional Engineer responsible for their design.

C. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

D. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION

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SECTION 032000 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Reinforcing steel bars.
2. Steel wire mesh.
3. Reinforcement accessories.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
1. Section 030130 – Concrete Rehabilitation
2. Section 031000 - Concrete Forming and Accessories: Coordination between formwork and reinforcing.
3. Section 033000 - Cast-in-Place Concrete: Coordination between concrete placement and reinforcing.

1.2 REFERENCES

A. American Concrete Institute (ACI):
1. ACI 301 - Structural Concrete for Buildings.
2. ACI 318 - Building Code Requirements for Reinforced Concrete.
3. ACI SP-66 - American Concrete Institute - Detailing Manual.

B. American Society for Testing and Materials (ASTM):
1. ASTM A 184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
2. ASTM A 615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
3. ASTM A 704 - Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.

C. American Welding Society (AWS):
1. AWS D1.4 - Structural Welding Code for Reinforcing Steel.

D. Concrete Reinforcing Steel Institute (CRSI):
1. CRSI - Manual of Practice.
2. CRSI 63 - Recommended Practice for Placing Reinforcing Bars.
3. CRSI 65 - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice ACI 301, ACI SP-66, ACI 318, and ASTM A 184.

B. Design reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State where the Project is located.

C. Welders' Certificates: Submit certificate, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Steel: ASTM A 615, 60 ksi yield grade; deformed billet steel bars, unfinished.

B. Reinforcing Steel Mesh: ASTM ASTM A185; 4x4, W3.5 X W3.5.

2.2 ACCESSORIES

A. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including continuous bearing wires and/or load bearing pad on bottom to prevent puncture as required. Manufacture bar supports from steel wire or plastic according to CRSI's "Manual of Standard Practice," and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

B. Mechanical splices: mechanical splices shall be uni-axial type capable of developing 125 percent of the specified yield strength of the bar in tension.
1. Submit copies of mill test reports of steel used in the fabrication of reinforcing couplers showing the chemical and mechanical properties.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI SP-66 and ACI 318.

B. Welding of reinforcement is not permitted.

C. Locate reinforcing splices not indicated on drawings, at point of minimum stress. Review location of splices with Engineer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

3.2 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Accommodate placement of formed openings.

C. Maintain concrete cover around reinforcing in accordance with ACI 318.

3.3 FIELD QUALITY CONTROL

A. Inspect reinforcing locations, bar types and sizes, wire ties, and welding (if applicable).

END OF SECTION

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SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Includes all labor, materials and appliances, and perform all operations in connection with the installation of Concrete Work, and all related work incidental to the completion thereof, as shown on the drawings, complete, in strict accordance with the drawings and as specified herein. Section Includes:

1. Cast-in-place (CIP) concrete in slabs-on-grade.
2. Finishing of concrete floor slabs and toppings.
3. Concrete curing and protection.
4. Testing related services.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents and References in Section 1.2.

C. Related Sections: Related work specified elsewhere includes but may not be limited to:
1. Section 031000: Concrete Forming and Accessories
2. Section 032000: Concrete Reinforcement

1.2 REFERENCES

A. General:
1. The publications listed below form a part of this specification to the extent referenced.
2. Where a date is given for reference standards, the edition of that date shall be used. Where no date is given for reference standards, the latest edition available on the date of Notice Inviting Bids shall be used

B. American Association of State Highway and Transportation Officials (AASHTO)
1. AASHTO M182, “Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats.”

C. Unless otherwise shown or specified, the work shall conform to the following standards and recommendations of the American Concrete Institute (ACI), latest editions adopted:
1. ACI 117, “Standard Specification for Tolerances for Concrete Construction and Materials.”
2. ACI 121R, “Quality Assurance Systems for Concrete Construction.”
3. ACI211.1, “Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
4. ACI 212.2R, “Guide for Use of Admixtures in Concrete.”
5. ACI 214, “Recommended Practice for Evaluation of Strength Test Results of Concrete.”
6. ACI 301, “Specification for Structure /Concrete.”
7. ACI 302.1R, “Guide for Concrete Floor and Slab Construction.”
8. ACI 304R, “Guide for Measuring, Mixing, Transporting, and Placing Concrete.”
9. ACI 304.2-R, "Placing Concrete by Pumping Methods."
10. ACI 305, “Hot Weather Concreting.”
11. ACI 306, “Cold Weather Concreting.”
12. ACI 306.1 “Standard Specification for Cold Weather Concreting.”
13. ACI 308, “Standard Practice for Curing Concrete.”

14. ACI 309R, “Guide for Consolidation for Concrete.”
15. ACI 315, “Details and Detailing of Concrete Reinforcement.”
16. ACI 318, “Building Code Requirements for Structural Concrete.”
17. ACI 347, “Guide to Formwork for Concrete.”
18. ACI 347.2R “Guide for Shoring/Reshoring of Concrete Multistory Buildings.”
19. ACI 503.2, “Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive.”
20. ACI SP-15, "Field Reference Manual" which includes ACI 301 "Specifications for Structural Concrete for Buildings" and reference standards specified therein.

D. American Welding Society (AWS)
1. AWS D1.4, "Structural Welding Code Reinforcing."

E. American Society for Testing and Materials (ASTM).
1. ASTM A615, "Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement."
2. ASTM C31, “Standard Practice for Making and Curing Concrete Test Specimens in the Field.”
3. ASTM C33, "Standard Specification for Concrete Aggregates."
4. ASTM C39, "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens."
5. ASTM C42, “Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.”
6. ASTM C94, "Standard Specification for Ready-Mixed Concrete."
7. ASTM C109, “Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)”
8. ASTM C114, "Standard Test Method for Chemical Analysis of Hydraulic Cement."
9. ASTM C138, "Standard Test Method for Unit Weight, Yield, and Air Content of Concrete (Gravimetric) of Concrete."
10. ASTM C143, "Standard Test Method for Slump of Hydraulic Cement-Cement Concrete."
11. ASTM C150, "Standard Specification for Portland Cement."
12. ASTM C156, "Standard Test Method for Water Retention by Concrete Curing Materials."
13. ASTM C171, "Standard Specification for Sheet Materials for Curing Concrete."
14. ASTM C173, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method."
15. ASTM C231, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method."
16. ASTM C260, "Standard Specification for Air Entraining Admixtures for Concrete."
17. ASTM C309, "Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.”
18. ASTM C311, “Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland-Cement Concrete.”
19. ASTM C387, "Standard Specification for Packaged, Dry, Combined Materials for Mortars and Concrete."
20. ASTM C457, “Standard Test Method for Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete.”
21. ASTM C494, "Standard Specification for Chemical Admixtures for Concrete."
22. ASTM C618, "Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete."
23. ASTM C920, “Standard Specification for Elastomeric Joint Sealants.”
24. ASTM C685, "Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.”
25. ASTM C989, “Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.”
26. ASTM C1260, “Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method).”

27. ASTM C1567, “Standard Test Method for Potential Alkali Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method).”
28. ASTM E154, "Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Slabs, On Walls, or as Ground Cover.”
29. ASTM E1155, “Standard Test Method for Determining F Floor Flatness and FL Floor Levelness Numbers”
30. ASTM D2240, “Standard Test Method for Rubber Property-Durometer Hardness.”

F. Concrete Reinforcing Steel Institute (CRSI),
   1. CRSI "Manual of Standard Practice.”

1.3 SUBMITTALS

A. Submittal Procedures: Procedures for submittals.
   1. Review of submittals will cover general design only. In no case shall submittal review relieve the Contractor of the responsibility for strength of concrete, general or detailed dimension, quality or quantity of materials, or any other conditions, functions, performance or guarantees required.
   2. Product Data:
      a. Manufacturers' literature containing product and installation specifications and details.
      b. Where Manufacturer's specifications, recommendations, and/or directions are required in this specification, deliver to the Owner two (2) copies of such printed specifications, recommendations, and/or directions for approval before any work is commenced.
      c. Sources of fine and coarse aggregate. Once approved, the source of fine and coarse aggregate shall not be changed without written approval of the Engineer.
      d. List of manufacturers and brand names for cement, mineral and liquid admixtures, bond breakers, curing compounds, joint sealants and materials other than aggregates and reinforcing steel. Include product data sheets, instructions, and specifications for use.
   3. Batch Plant Equipment and Procedures
      a. Supplier of concrete and ready-mix grout. Only one source will be approved for the Contractor, including all subcontractors. All concrete and ready-mixed grout supplied to the project shall originate from the approved single facility.
      b. The following information shall be submitted:
         1) Name of supplier.
         2) Plant location.
         3) Plant volume and output capacity.
         4) Capacity of transit equipment.
         5) Estimated travel time from plant to jobsite.
      c. All other data necessary to show the supplier’s capability to produce concrete of the quality and quantity required.
   4. Concrete Procedures
      a. The following information shall be submitted:
         1) Placement drawings for slab-on-grade shall be submitted indicating location and size, placement sequence, joint locations, and embedded items.
         2) Procedure for mixing and transporting concrete to the point of placement.
         3) Procedures for placement of concrete.
         4) Methods of obtaining and maintaining the required concrete temperature during placement and initial curing.
         5) Procedures for consolidating the concrete.
         6) Procedures how concrete is finished and cured (slab-on-grade concrete).
   5. Assurance/Control Submittals:

a. Test Reports: Submit the following reports directly to Engineer from Testing Laboratory, with copy to Contractor.
b. Submit laboratory test reports for concrete materials and mix design test, including certified copy of results of aggregate tested by ASTM C1260 or C1567. Mix designs for each strength and type of concrete proposed for use. Details to be included are found in section 2.7.
c. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
d. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.

6. Delivery Tickets:
   a. Copies of delivery tickets for each load of concrete delivered to site.
   b. Indicate on each ticket information required by ASTM C94 including additional information required herein.
   c. Mix identification number on ticket shall match number on submitted and approved mix design
   d. Indicate number of drum revolution from when water is added until concrete is discharged.
   e. Submit copies to Testing Laboratory same day as concrete delivery.

1.4 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
   2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.

B. Deliver materials in unopened containers with labels identifying contents.

C. Store powdered materials in dry area and in manner to prevent damage. Protect liquid materials from freezing or exceeding maximum storage temperatures set by product manufacturer.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Jobsite Requirements:
   1. Conform to ACI 305 R when placing concrete during hot weather.
   2. Conform to ACI 306 R when placing concrete during cold weather.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Resource Management:
   1. Recycled Content:
      a. Concrete: Fly ash may be used as a substitute for a maximum of 25 percent of Portland cement.

B. Environmental Impact:
   1. Concrete placement accessories:

a. Mixing equipment: Return excess concrete to supplier; minimize water used to wash equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Applied Concrete Technology, Inc., Post Office Box 548, Grayslake, IL 60030, Toll Free: 800-228-6694, Phone: 847-548-2444, Fax: 847-548-2555. www.protecrete.com
2. The Euclid Chemical Company, 19218 Redwood Road, Cleveland, OH 44110, Phone: 216-1-9222, Toll Free: (800) 321-7628, Fax: 216-531-9596 www.euclidchemical.
3. ChemRex Inc., Shakopee, Minnesota 55379, Toll Free: 800-433-9517, Fax: 800-496-6067.
4. BASF Construction Chemicals North America (former Master Builders), 23700 Chagrin Boulevard, Cleveland, OH 44122, Phone: 216-839-7500, Fax: 216-839-8821.
5. W.R. Meadows, Inc., PO Box 338, Hampshire, Illinois 60140-0338, Toll Free: 800-342-5976, Phone: 847-683-4500.
6. Reef Industries, 9209 Almeda Genoa, Houston, Texas 77075, Phone: 713-507-4251, Toll Free: 800-231-6074, Fax: 713-507-4295.
7. Stego Industries LLC, 27442 Calle Arroyo Suite A, San Juan, Capistrano, CA 92675, Phone: 877-464-7834, Fax: 949-493-5165, www.stegoindustries.com.
8. L & M Construction Chemicals, Inc. 14851 Calhoun Rd., Omaha, NE 68152-1140; Phone: 402-453-6600, Fax: 402-453-0244.
9. Curecrete Chemical Company, Inc., 1203 W. Spring Creek Pl., Springville, UT Phone: 801-489-5663.
10. Midwest Floor Care Inc., 17202 Princeton Rd, Adams, NE 68301, Phone: 402-788-2820.
11. General Resource Technology, Inc., 2978 Center Court, Eagan, MN 55121, Phone: 800-324-8154, Fax: 651-454-4252, www.grtinc.com.
12. W. R. Grace & Co., 7500 Grace Dr, Columbia, MD 21044, Phone: (410) 531-4000; https://grace.com/en-us

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 CONCRETE MATERIALS

A. Concrete:
1. Concrete shall be in accordance with ASTM C94. If a conflict exists between ASTM C94 and these specifications, these specifications shall govern.

B. Portland Cement: ASTM C150 – Type I unless otherwise specified or approved by the Engineer.
1. Assume full responsibility for the quality and soundness of cement. Cement is to be of one type and from the same mill; it is to be of uniform color for all concrete with permanently exposed concrete finishes.

C. Liquid admixtures: All admixtures shall be used in conformance with the manufacturer’s recommendations. When air entraining admixtures, water reducing admixtures, high range water reducing admixtures, and non-corrosive accelerating admixtures are used in any combination, all products shall be from the same manufacturer, or the ready-mix concrete producer shall certify that they are compatible. The following admixtures are permitted when approved in writing prior to use or are required as specified herein and shall be used in strict accordance with the manufacturer's specifications or recommendations:

1. Calcium chloride: Conform to ACI 301. The water-soluble chloride ion level shall not exceed 0.3 percent by weight of cement.

2. Air-entraining admixtures: ASTM C260 shall be used to achieve the specified air content in all permanently exposed exterior concrete. For steel hard trowel interior slab finish, do not use air entrainment admixtures. The total air entrainment (entrained and entrapped air) must not exceed 3 percent. For steel trowel exterior slab finish, comply with ACI 318 and ACI 302.
   a. Euclid: AEA-92 or Air Mix 200.
   b. BASF: Micro-Air, MBVR-Standard, and MB AE 90.
   c. Sika: Sika AEA-14, Sika AEA-15, and Sika Air.
   d. W.R. Grace: Darex EH, Darex II AEA, Daravair AT60, Daravair 1400, and Daravair 1000.

3. Water-reducing admixtures: Conform to ASTM C494, Type A, containing not more chloride ions than allowed in paragraph C., above.
   a. Euclid: Eucon WR series or Eucon MR.
   b. BASF: Masterpave, Masterpave N, PolyHeed 997, Pozzolith 220N, and Glenium 7500.
   c. W.R. Grace: Daracem 55 and Daracem 65, WRDA 82 and WRDA with HYCOL.
   d. Sika: Sikament HP, Plastocrete 161, and Sikament 686.
   e. General Resource Technology: Polychem 400 NC and Polychem 1000.

4. Water-reducing/accelerating admixtures: Conform to ASTM C494, Type C or E having long-term test results showing non-rusting on metal deck and reinforcing steel.
   a. Euclid: Accelguard series.
   b. BASF: Pozzutec 20+, Pozzolith NC 534, and Rheocrete CNI.
   c. Sika: Sika Rapid-1 and Plasocrete 161FL.
   d. W.R. Grace: Lubricon NCA, Polarset, and DCI.

5. Water-reducing/retarding admixtures: Conform to ASTM C494, Type D containing not more than 1 percent chloride ions.
   a. Euclid: Eucon Retarder series.
   b. BASF: Delvo Stabilizer, Masterpave series, and Pozzolith 100XR, 200N, 220N and 322N.
   c. Sika: Plastimet.
   d. W.R. Grace: Daratard 17, WRDA-64, and WRDA-82.

6. High-range/water-reducing (HRWR) admixtures: Conform to ASTM C494, Type F or G super plasticizers containing 1 percent maximum chloride ions may be used with low slump (3 inches maximum) concrete to produce flowable concrete (up to 8 inches slump) with early strength gain and 28-day strengths equal to reference concrete. HRWR admixture may be used providing not more than 60 minutes is allowed from addition of admixture to final placement of concrete. HRWR admixture shall be used in concrete with a maximum water/ cement ratio of 0.50 or less and is suggested in the following:
   a. In pumped concrete.
   b. In concrete topping slabs
   c. In lieu of the specified water-reducing admixture (Type A) where confinement of placing due to heavy reinforcement or narrow space requires flowable concrete.
   d. Where more than 30 minutes is required between the addition of admixtures to final placement of the concrete, a combination of water-reducing, set controlling admixtures (ASTM C494, Types A, D, & E) as in Master Builders Company "Synergized Performance System" may be used.
      1) Euclid: Eucon 37 or Eucon 537.
      2) BASF: Rheobuild 1000, Glenium 3000 NS, and Glenium 3400NV.
      3) Sika: Sikament 300, Viscocrete 2100, and Sikament 686.

4) W.R. Grace: Daracem 100, ADVA Cast 530, Mira 92, and ADVA Cast 575.

D. Fly ash: Conform to ASTM C618. The use of a quality fly ash will be permitted as a cement-reducing admixture (minimum 15 percent and maximum 25 percent). Fly ash used in concrete shall be from a single source and of a single class in combination with Portland cement of a single source and single class unless otherwise approved by the Engineer. The fly ash shall meet all of the requirements of ASTM C618, Class C or Class F, with the following special requirements: The loss on ignition in Table 1 shall not exceed 3 percent. Compliance to Table 1A shall apply. The amount retained on the 325 sieve in Table 2 shall not exceed 34 percent. Where a Type II low-alkali cement is specified, the total C_3A shall be less than 8 percent of total cementitious material. The chemical analysis of the fly ash shall be reported in accordance with ASTM C311. Quality assurance testing and reports for a minimum of six months shall be submitted by the fly ash supplier.

E. Certification: Certification of the above requirements is required from the admixture manufacturer prior to mix design review and approval by the Owner. Upon request by the Owner, a qualified representative is to be provided to assure proper use of admixtures. Use of admixtures, other than listed above will be permitted only when approved.

F. Aggregates:
1. Normal-weight concrete - ASTM C33. For slabs, also conform to combined aggregate grading recommendations of ACI 302 and ACI 302.1R, unless otherwise permitted.
2. All concrete exposed to the weather shall conform to the limits of deleterious substances and physical properties of Table 3, ASTM C 33.
3. Local aggregates: Local aggregates not complying with ASTM C33, but which have been shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Owner.
4. The nominal size of an aggregate particle shall not exceed:
   a. 20 percent of the narrowest dimension between sides of forms.
   b. 33 percent of the depth of slabs.
   c. 75 percent of the dimension between reinforcing bars.
   d. 75 percent of the dimension between reinforcing bars and forms.
5. Maximum size of coarse aggregates and minimum cementitious contents: ACI 301 and ACI 302.1R.
6. Concrete aggregate alkali-silica reactivity (ASR) shall be tested in accordance with ASTM C1260 with a 14-day expansion (no supplementary cementing materials) or ASTM C1567 (with supplementary cementing materials) of less than 0.1 percent. Materials (cement, supplementary cementing materials, and aggregates) to be used in the concrete shall be tested. Coarse aggregates and fine aggregates shall be individually tested. If two grades of coarse aggregates are blended they shall be individually tested.
7. Abrasive aggregates non-slip finishes: Fused aluminum oxide grits, or crushed emery, as abrasive for non-slip finish with emery aggregate containing not less that 40 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rustproof, non- glazing, and unaffected by freezing, moisture, and cleaning materials.

G. Water:
1. Clean, potable, and free of injurious amounts of oil, acid, alkali, organic or other deleterious matter not detrimental to concrete; drinkable.
2. Water shall contain no more than 650 parts per million of chlorides as Cl or more than 1000 parts per million of sulfates as SO_4. In no case shall the water contain an amount of impurities that will cause a change in the setting time of Portland cement of neither more than 25 percent nor a reduction in compressive strength of mortar at 14 days of more than

5 percent when compared to the results obtained with distilled water when tested in accordance with ASTM C109.

3. Water used for curing shall not contain impurities in amounts to cause discoloration of the concrete or mortar or to produce etching of the surface.
4. Recycled water shall conform to ASTM C94.

2.3 CURING/SEALING/HARDENERS

A. Dissipating liquid membrane-forming compounds for curing concrete; Conform to ASTM C309, Type 1. Curing compound shall be compatible with floor sealer or finish used. Low VOC.
   1. Euclid: VOX Kurex DR VOX series; waterborne products.
   2. W.R. Meadows: 1100-Clear series.
   3. Edoco: Burke Aqua Resin Cure.
   4. L&M Construction Chemicals: Cure R.
   5. BASF: Kure 200W
   6. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Method of curing shall be approved by the finish flooring applicator where finishes are indicated.

2.4 VAPOR BARRIER/RETARDER

A. Provide cover over prepared soil, above aggregate subbase material at slabs-on-grade Use only materials which are resistant to decay when coated in accordance with ASTM E154.
   1. Vapor Retarder: Polyethylene sheet not less than 10 mils thick, or
   2. Vapor Barrier:
      a. Stego: Stego Wrap Vapor Barrier 10 –mil
      b. Fortifiber: Moistop and Moistop Ultra 10.
      c. Insulation Solution Viper Vaporcheck 10.
   3. Or approved equal.

2.5 PROPORTIONING

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If laboratory trial batch method is used, use an independent testing facility acceptable to Owner for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing and inspection unless otherwise acceptable to Owner.

B. Submit written reports to the testing laboratory of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and approved. Include the following information for each concrete mix design:
   1. Method used to determine the proposed mix design.
   2. Gradation of fine and coarse aggregates, plus combined aggregate gradation for slabs, ACI 302.1R.
   3. Aggregate specific gravities and absorptions.
   4. Proportions of all ingredients reported on a saturated surface dried basis including all admixtures added either at the time of batching or at the job site.
   5. Water-cementitious ratio.
   6. Slump, ASTM C143.
   7. Certification of the chloride content of individual admixtures and of the mixes as proposed.
   8. Air Content: ASTM C173 (Volumetric Method).
   9. Unit weight of concrete, ASTM C138.

10. Strength at 3, 7, and 28 days, ASTM C39.
11. Method of recording batch proportions.
12. Substantiating test reports.
13. Dosage of all admixtures.

C. Concrete types and strengths: Minimum 28 Day Compressive Strength shall be per design requirements but not less than:
1. Slabs-on-grade:4,000 psi.
2. All concrete exposed to weather or to de-icer chemicals shall be air entrained (ASTM C260).
3. All concrete shall be normal weight except as noted above.

When the concrete mix design is developed from laboratory trial batching, adjust proportions to produce a design mix at least 1200 psi greater than the specified strength.

When the field experience method is used, the required average compressive strength shall be determined in accordance with ACI 318.Documentation that proposed concrete proportions will produce an average compressive strength equal to or greater than the required average compressive strength shall consist of a field strength test record representing materials and proportions to be used for this project. A field strength test record shall consist of at least 10 consecutive tests encompassing a period of time of not less than 45 days and made within the past 12 months.

D. Weights: All concrete shall be normal-weight concrete unless otherwise designated on the structural drawings.

E. Aggregate gradation: For slabs, also conform to combined aggregate grading recommendations of ACI 302.1R, unless otherwise permitted. For all other concrete not otherwise noted the coarse aggregate gradation shall conform to ASTM C33 size no. 57 or larger.

F. Durability: Conform to ACI 301.
1. All concrete exposed to potentially destructive weathering, such as freezing and thawing, or to de-icer chemicals is to be air-entrained, 6 percent $\pm$1percent, a minimum six sacks cementitious per cubic yard of concrete, 0.45 maximum water-cementitious ratio, and 4-inch maximum slump prior to the addition of water-reducing admixtures.
2. Water-cement ratio: For concrete subject to freezing and thawing or deicer chemicals, the water-cement ratio shall not exceed 0.45 by weight including any water added to meet specified slump in accordance with the requirements of ASTM C94 unless otherwise noted.

G. Slump: Conform to ACI 301.
1. 3 ½ inch maximum for consolidation by vibration
2. 5 inch maximum for consolidation by other methods
3. 8 inch maximum at point of discharge from truck into pump for pumped concrete . Concrete containing HRWR admixture (super plasticizer): 3 inch maximum before addition of HRWR
4. Where field conditions require slump to exceed that specified above, the increased slump shall be obtained by the use of a superplasticizer only, and the Contractor shall obtain written approval from the Engineer who may require an adjustment to the mix.

H. Production of concrete: Conform to ACI 301:
1. Cast-in-place concrete used in the work shall be produced at a single off-site batching plant or may be produced at an on-site batch plant.
2. All concrete shall be proportioned conforming to the approved mix designs and of the materials contained in those approved mixes. A certified copy of the design weights for each mix shall be kept at the producing plant for each class of concrete used on the project.

3. Plant equipment and facilities are to conform to the "Check List for Certification of Ready - Mixed Concrete Production Facilities" of the National Ready-Mixed Concrete Association (NRMCA) and have NRMCA or approved certification within the past year.
4. Coarse aggregates shall be washed and, if necessary, shall be uniformly moistened just before batching. Each size of coarse aggregate shall be batched from separate bins as required to produce the combined grading requirements.
5. Prior to adding a high-range water reducer (super plasticizer), slump shall not exceed the working limit. The high-range water reducing admixture shall be accurately measured and pressure-injected into the mixer as a single dose. If added at the jobsite, the field dispensing system shall conform to the same requirements as a plant system and tested prior to each day's operation. After the addition of the high-range water reducer, the concrete shall be mixed at mixing speed for a minimum of 5 minutes.
6. Ready-mixed and on-site batched concrete shall be batched, mixed, and transported in accordance with ASTM C94.
    a. Truck mixers and their operation shall ensure that the discharged concrete is uniformly within acceptable limits of consistency, mix, and grading. All mechanical details of the mixer, such as water-measuring and discharge apparatus, conditions of the blades, speed of rotation, general mechanical condition of the unit, and clearance of the drum shall be checked before the use of the unit will be permitted.
    b. Truck mixers shall be equipped with approved revolution counters by which the number of revolutions of the drum or blades may readily be verified. The water tank system of the truck shall be equipped with gauges that permit accurate determination of the tank contents.
    c. Each batch of concrete shall be mixed in a truck mixer for not less than 80 revolutions of the drum or blades and at the rate of rotation designated as mixing speed by the manufacturer of the equipment. Additional mixing, if any, shall be at the speed designated as the agitating speed by the manufacturer of the equipment. All materials, including mixing water but excluding any high-range water reducers added onsite, shall be in the mixer drum before actuating the revolution counter for determining the number of revolutions of mixing.
    d. The concrete producer shall furnish duplicate delivery tickets, one for the Contractor and one given to the Owner's Representative for each batch of concrete. The information provided on the delivery ticket shall include the quantity of materials batched including the amount of free water in the aggregate and any water added onsite. Show the date, time of day batched, and if ready-mixed the time of discharge from the truck. The quantity of water that can be added at the site without exceeding the maximum water-cementitious ratio specified shall be noted on the delivery ticket.
7. Concrete produced by on-site volumetric batching and continuous mixing if approved shall conform to ASTM C685.
8. For concrete produced on site with a central batch plant, mixing shall be done in an approved batch mixer.
    a. The Contractor shall maintain and operate the on-site batch plant and transportation equipment in a manner that will produce the results specified in this section.
    b. The Engineer reserves the right to reject the proposed on-site plant if, in his/her opinion, the on-site plant will interfere with other operations or impair the quality of the concrete.
    c. The quantities of cement, pozzolanic materials, and aggregates used in each batch shall be determined by automatic weighing. The quantity of water shall be determined by weighing or volumetric measurement.
    d. The weighing equipment for aggregates shall be readily adjustable both to compensate for variation in moisture content of the aggregates and for changing mix proportions. Moisture-sensing devices shall automatically compensate the aggregate weights for changes in moisture content. The charging of weigh hoppers directly from aggregate handling equipment such as front-end loaders will not be permitted.

e. Mixers in centralized batching and mixing plants shall be arranged so that mixing actions can be observed from a location convenient to the mixing-plant operator's station.
f. Equipment shall be provided that discharges pozzolanic material into the cement hopper only after the addition of the Portland cement. Pozzolanic materials shall be stored in such a manner as to permit ready access for the purpose of inspection and sampling and be suitably protected against contamination of moisture. Should any pozzolan show evidence of contamination or be otherwise unsuitable, the Engineer will reject it and require that it be removed from the site.
g. Dispensers for admixtures shall have the capacity of the full quantity of the properly diluted solution required for each batch. They shall be maintained in a clean and freely operating condition. Admixtures shall be added to the premeasured water for the batch or shall be discharged into the batch by flowing automatically and uniformly into the stream of mixing water from the beginning to end of its flow into the mixer. Equipment for measurement shall give visual confirmation of the accuracy of the measurement for each batch.
h. The central batch mixer shall be rotated at a speed recommended by the manufacturer and mixing shall be continued for a minimum of 1-1/2 minutes after all materials are in the drum.
i. Each stationary mixer shall be equipped with a mechanically operated timing and signaling device that will indicate and ensure the completion of the required mixing period and will count the batches.
j. All concrete shall be mixed until there is a uniform distribution of the materials and shall be discharged completely before the mixer is recharged.

9. The Engineer may increase the mixing time when the charging and mixing operations fail to produce a delivered batch in which variations of consistency, mix, or grading are within the limits specified.
10. Variations in consistency during the discharge of a single batch shall not exceed 1 inch of slump, except that a greater variation will be permitted if the slump of the concrete decreases and no water is added. Variations in mix and in grading of different parts of the delivered batch shall be within limits stated in ASTM C94.
11. Water shall be introduced prior to, during, and following mixer-charging operations.
12. When a mixer produces unsatisfactory results, it shall be repaired promptly and effectively, or it shall be replaced.
13. Mixers shall not be loaded in excess of their rated capacity.
14. Overmixing, such as to require addition of water to preserve the required consistency or to reduce slump, will not be permitted.
15. All other concrete: Conform to ACI 301
16. Use of accelerating admixtures in cold weather and retarding admixtures in hot weather shall not relax placement requirements specified herein.
17. All concrete placed at ambient temperatures below 50 degrees F is to contain an approved accelerator. The concrete temperature when delivered at the site shall be at least 50 degrees F.
18. All concrete placed at ambient temperatures above 80 degrees F is to contain an approved retarder.
19. All concrete required to be air-entrained is to contain an approved air-entraining admixture.
20. When improved workability, pumpability, lower water-cement ratio, or high ultimate and/or early strength is required, the HRWR admixture (super plasticizer) may be used.
21. Ensure air content for slabs with steel trowel finish is less than 3.0 percent.
22. The concrete shall be of such consistency and composition that it can be worked readily into the corners and angles of the forms and around reinforcement without permitting materials to segregate or free water to collect on the surfaces. Within the limiting requirements, adjust the consistency of the concrete as may be necessary to produce mixtures which will be placeable with reasonable methods of placing and compacting. Maintain on the job at all times adequate extra cement to be used at rate of 1/2 sack cement per cubic yard concrete for each 2" slump increase for corrections due to wetness desired

or obtained. No water shall be added to concrete except under the direct awareness of the project inspector.

23. No water shall be added to concrete except under the direct awareness of the project inspector. The water-cementitious ratio stated on the approved mix designs shall not be exceeded unless approved by the Engineer. Re-tempered concrete shall be mixed for not less than 80 revolutions of the drum or blades and at the rate of rotation designated as mixing speed by the manufacturer of the equipment.
24. Adjustments to concrete mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant at no additional cost to Owner. Laboratory test data for revised mix design and strength results must be submitted and accepted before using in work.

2.6 FORMWORK

A. Section 031000: Concrete Forming and Accessories

2.7 REINFORCING MATERIALS

A. Section 032000: Concrete Reinforcement

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

3.2 INSTALLATION - GENERAL

A. Install all cast-in-place concrete work in accordance with ACI 301 except as herein specified.
B. Immediately before placing concrete, spaces to be occupied by concrete shall be free from standing water, ice, mud, and debris.
C. Concrete shall not be deposited under water or where water in motion may injure the surface finish of the concrete.
D. Forms and the reinforcement shall be thoroughly cleaned of ice and other coatings. Remove surplus form releasing agent from the contact face of forms.
E. Notify all trades concerned and the Owner’s Representative sufficiently in advance of the scheduled time for concrete placement to permit installation of all required work by other trades.
F. Before placing concrete, all required embedded items, including dovetail anchor slots, anchors, inserts, curb angles, metal frames, fixtures, sleeves, drains, stair nosings, accessory devices for

Mechanical and Electrical installations shall be properly located, accurately positioned and built into the construction, and maintained securely in place.

G. Build into construction all items furnished by the Owner and other trades. Provide all offsets, pockets, slabs, chases and recesses as job conditions require.

H. Place and properly support reinforcing steel and anchor bolts.

I. The alignment, orientation, spacing, and embedment length of mechanical load transfer devices in slab-on-grade and pavements shall conform to dimensions and tolerances shown on the drawings.

J. The Owner's Representative should attend the first concrete pour.

3.3 INSTALLATION - FORMWORK

A. Section 031000 - Concrete Forming and Accessories

B. Construction and Contraction Joints: Conform to ACI 301 and recommendations of ACI 302.1R.

3.4 REINFORCEMENT

A. Placement: Section 032000 - Concrete Reinforcement

3.5 METHODS OF PLACEMENT AND PLACING CONCRETE

A. Placement: Conform to ACI 301:

1. Maintain concrete cover around reinforcing as per Section 3.3 above and ACI 301.
2. The methods and equipment used for transporting concrete to the site work and the time that elapses during transportation shall not cause segregation of coarse aggregate or slump loss in excess of 1 inch when measured at the point of discharge.
3. Concrete shall be placed within 90 minutes after the water has been added to the cement and aggregates. Concrete shall be placed prior to initial concrete set.
4. Placing of concrete will not be permitted during rainfall or when rain appears imminent. If rain should fall subsequent to placement, the concrete shall be completely protected until curing is complete.
5. Cold-Weather Placement: Comply with provisions of ACI 306.1 "Standard Specifications for Cold-Weather Concreting" and as follows.
    a. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
    b. When necessary, arrangements for heating, covering, insulating, or housing the concrete work shall be made in advance of placement and shall be adequate to maintain the required temperature during the first 24 hours.
    c. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
    d. Concrete shall not be placed on frozen ground or placed when the ambient temperature is 40 deg F or less and dropping.
    e. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
    f. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures using vented heaters and insulating blankets.
    g. Vent heater exhaust gases that contain carbon dioxide outside of enclosed areas.
    h. Concrete temperatures shall be maintained above 50 degrees F for the first 7 days of curing.

6. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305R “Standard Specification for Hot-Weather Concreting” and as specified.
   a. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice of a size that will melt completely during mixing may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   b. Reject any concrete that has a temperature at the point of placement above 90 deg F, unless approved otherwise by the Construction Project Manager. When air temperatures are between 80 and 90 deg F the maximum mixing and delivery time is reduced to 75 minutes. When air temperatures exceed 90 deg F, the maximum mixing and delivery time is reduced to 60 minutes.
   c. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
   d. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
   e. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Owner.
   f. Spray evaporative retardants, wind breaks, misters, or shade concrete when the rate of surface evaporation when calculated in accordance with ACI 305.5 exceeds 0.2 lb/sq. foot per hour.
   g. ACI 305R-10, “Hot Weather Concreting”, lists practices for hot weather concreting, including but not limited to the following:
      1) Minimizing the time to transport, place, consolidate and finish the concrete.
      2) Protecting the concrete from moisture loss during placing and curing periods.
   h. Monitor environmental factors such as temperature, humidity, and wind speed to estimate the evaporation rate of surface moisture as recommended in ACI 305R-10. Wind speed should be monitored at 20 inches above the evaporating surface.
   i. When the evaporation rate is expected to approach the bleeding rate of the concrete, precautions should be taken as detailed in ACI 305R-10, Chapter 6. For concrete mixes containing fly ash or similar admixtures, a very low bleeding rate of 0.05 lb/ft2/hr should be used as a limit on the surface evaporation rate. Refer to ACI 305R-10 for other methods for estimating the evaporation rate of surface moisture.
   j. Reduce the lag time between concrete load deliveries to the job site and provide a representative at the concrete pump to coordinate load deliveries. One truck needs to be queued up at the concrete pump by the completion of dumping each previous load into the concrete pump’s hopper to avoid delays in concrete placement.
   k. Provide additional measures as noted in ACI 305R-10 to reduce evaporation, such as temporary wind breaks, shade, fogging and/or other required measures.
   l. Apply an evaporation retarder, such as AquaFilm, to the fresh concrete surface immediately after striking off and bull floating to reduce evaporation before final finishing, and again immediately after finishing prior to sawcutting.

B. Depositing Concrete
   1. Deposit concrete as near its final position as possible to avoid segregation due to rehandling or flowing. Hoppers, tremies, pump line, ducts, chutes, or other methods approved by the Engineer shall be used to deposit concrete in its final position within the specified time limits and without segregation of the mix.
   2. The sequence of concrete placement and the number, type, position, and design of joints shall be approved by the Engineer prior to concrete placement.
   3. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to re-handling or flowing. No concrete shall have a free fall of over three feet from truck, mixer, or buggies.

4. The concreting shall be carried on at such a rate that the concrete is plastic at all times and flows readily into the spaces between reinforcing bars. No concrete that has partially hardened or been contaminated by foreign materials shall be deposited in the work
5. When concreting is started, it shall be carried on as a continuous operation until the placing of the section is completed.
6. Except as intercepted by joints, concrete shall be placed in continuous layers. The depth of layers shall not exceed 20 inches. Succeeding layers shall be placed while the previous layer is still plastic. Concrete placement shall begin at the lowest point in each section of concrete to be placed.
7. Protect adjacent surfaces from concrete drippings, spillage, and splashes. Hardened or partially hardened splashes or accumulations of concrete on forms or reinforcement shall be removed before the work proceeds. Clean all damaged surfaces immediately.
8. All conveyances shall be thoroughly cleaned at frequent intervals during the placement of the concrete, and before the beginning a new run of concrete all hardened concrete and foreign materials shall be removed from the surfaces.
9. The Superintendent of Foreman in charge of concrete work shall mark on the drawings the time and date of the placing of each concrete pour. Locations where concrete test cylinders are made shall also be noted on the drawings. Such drawings shall be kept on file at the job until its completion and shall be subject to the inspection of the Owner's Representative at all times.

C. Conveyor Belts and Chutes
1. Chutes or conveyor belts shall not be used except as approved by the Engineer.
2. Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent separation and loss of material.
3. Chutes longer than 50 feet and conveyor belts longer than 110 feet will not be permitted.
4. Equipment for conveying and chuting concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery point without separation of material.
5. Provide runways or other means for wheeled equipment to convey concrete to point of deposit. Construct runways so that supports will not bear upon reinforcement or fresh concrete.
6. The minimum slope of chutes shall enable concrete of the specified consistency to readily flow.
7. Ends of chutes, hopper gates, and other points of concrete discharge throughout the conveying, hoisting, and placing system shall be designed and arranged so that concrete passing from them will not fall separated into whatever receptacle immediately receiving the concrete. Adequate headroom provision must be made at such points for a vertical drop and for proper baffling.
8. If a conveyor belt is used, it shall be wiped clean by a device operated so that none of the mortar adhering to the belt will be wasted.

D. Pumping of Concrete
1. The type and operation of a concrete pump shall be subject to the approval of the Engineer. The equipment used in placing the concrete and the method of its operation shall introduce the concrete into the forms without high velocity. Placing equipment shall be operated only by experienced operators.
2. During pumping, the Contractor shall have on-site a standby placing system, acceptable to the Engineer, to ensure that in the event of breakdown of the primary placing equipment, the concrete placement can continue without cold joints.
3. The minimum diameter of the hose or conduit shall be 4 inches unless otherwise approved by the engineer. Aluminum conduits shall not be used for conveying the concrete. Pumping equipment, hoses, and conduits that are not functioning properly shall be replaced.

E. Consolidation

1. All concrete shall be thoroughly consolidated by internal mechanical vibrators during the placing operation and shall be thoroughly worked around the reinforcement and embedded fixtures and into corners of the forms.
2. Concrete for slabs 8 inches thick or less may be consolidated with vibrating screeds. Slabs between 8 to 12 inches thick shall be compacted with internal vibrators and (optionally) with vibrating screeds.
3. Concrete shall be consolidated by vibration to the maximum practicable density. The concrete shall be free from pockets of coarse aggregate and entrapped air.
4. Vibrators shall have a minimum diameter of 3 inches with a frequency of at least 7000 vibrations per minute and with an amplitude adequate to consolidate the concrete in the section being placed.
5. Forms shall contain sufficient windows or shall be limited in height to allow visual observation of the concrete during placement. Sufficient illumination shall be provided in the interior of forms so that at the places of concrete deposition the concrete shall be visible from the deck or runway.
6. Vibrators shall not be secured to forms or reinforcement.
7. Keep a minimum of two standby vibrators in operable condition on the job during concreting operations.
8. Consolidation shall be carried on continuously with the placing of concrete.
9. The number of vibrators employed shall be sufficient to consolidate the concrete within 15 minutes after it is deposited in the forms.
10. When consolidating each layer of concrete, the vibrator shall be operated at regular and frequent intervals 18 to 30 inches apart.
11. The vibrator shall be kept in nearly a vertical position as practicable. The use of vibrators to shift or drag concrete after deposition will not be permitted. Vibrators shall not be laid horizontally or laid over.
12. The vibrator head shall penetrate 6 to 8 inches into the preceding layer and then be withdrawn at a slow rate. The top part of each layer shall be re-vibrated systematically at the latest time the concrete can be made plastic by means of vibration.
13. Concrete shall not be placed until the previous layer has been vibrated.
14. Unless directed otherwise by the Engineer, the top 2 feet of walls shall be re-vibrated approximately 1 hour after placement of concrete and while a running vibrator will still sink under its own weight into the concrete and liquefy it momentarily.

F. Protection of cast concrete: Conform to ACI 301.

G. Repair of surface defects: ACI 301.
1. Inspect concrete surfaces and surfaces to be painted immediately upon removal of forms Irregularities shall be immediately rubbed or ground to secure a smooth, uniform, and continuous surface.
2. Clean surfaces of tie holes. Tie holes shall be filled solid with patching mortar.
3. Surfaces to be smoothed shall not be plastered or coated.
4. Patch imperfections as needed or as directed by the Engineer. Repairs in accordance with Section 3.8 shall not be made until the surface has been inspected and repair methods have been approved by the Engineer.

3.6 FINISHING

A. Finishing of formed surfaces: ACI 301:
1. Tops of forms:
   a. Strike concrete smooth at tops of forms.
   b. Float to texture comparable to formed surfaces.
2. Formed surfaces:
   a. Finished formed surfaces shall conform accurately to the shape, alignment, grades, and sections shown on the drawings or prescribed by the Engineer.

b. Surfaces shall be free from fins, bulges, ridges, honeycombing, or roughness of any kind and shall present a finished, smooth, continuous hard surface.
c. Permanently exposed surfaces: ACI 301 - "Smooth Form Finish" with the fins ground smooth and air holes shall be filled with a non-shrink mortar. The color of the patch material shall match the color of the surrounding concrete. Surfaces in unfinished areas unexposed to public view: ACI 301- "Rough Form Finish".

B. Slabs: Minimum slab surface tolerance must satisfy ACI 301 and ACI 302.1R as measured in accordance with ASTM E1155.
1. Slabs-on-grade:
a. For exposed slabs, install semi-rigid epoxy sealant in construction and contraction joints after slab has a minimum of 60 days or otherwise approved by the Engineer.
b. Separate slabs-on-grade from vertical surfaces with 1/2-inch-thick joint filler. Extend joint filler from bottom of slab to within 1/8 inch of finished slab surface.
c. Allowable tolerance for slab on grade surfaces, measured in accordance with ACI 117 and ASTM E1155, shall meet or exceed an overall value of FF35/Fl25, with minimum local value of FF24/FL17.
2. Concrete Finishes:
a. The following will not be permitted on slab or floor finishes:
1) Dusting dry cement or sand on the surface to absorb excess moisture.
2) Use of a mortar finishing coat.
3) Excessive troweling or manipulation that brings water or a large amount of fines to the surface.
4) Use of a Fresno.
5) Addition of water to the surface during the finishing operation.
6) Use of the floor during construction in a manner that leads to marring or staining the finish.
b. Surface preparation
1) The concrete shall be brought up evenly to slightly above finished grade and shall be thoroughly compacted and consolidated. The top shall be struck off to accurately established grade strips or grade blocks. Complete screeding before any excess moisture or bleedwater is present on the surface.
2) After bull floating, defer additional finishing operations until the concrete has stiffened sufficiently to sustain foot traffic pressure with an indentation of not more than ¼ inch.
c. Floor Slabs: Steel trowel finish unless otherwise noted on the plans. As soon as the moisture sheen has disappeared from the floated surface and he concrete has hardened sufficiently to prevent drawing moisture and fine materials to the surface, the surface shall be steel troweled to produce a smooth, hard, uniform finish. Apply evaporation retarder to surface after each cycle of trowling. Final steel troweling shall be conducted after the concrete is hard enough that no mortar accumulates on the trowel when manipulated with heavy pressure. Machine finishing may be used for troweling.
d. Exposed concrete slabs sealed or sealed and hardened using a liquid compound compatible with the curing method used.
e. A heavy broom finish shall be provided on disabled person ramps, utility ramps, and around exterior loading docks.

3.7 CURING, PROTECTION, LIQUID HARDNERS AND SEALERS

A. Temperature, Wind, and Humidity
1. When concrete slabs and other unformed concrete is placed in warm, dry, dusty, or windy conditions, concrete surfaces shall be protected from rapid drying by use of windbreaks, shading, fogging with properly designed nozzles, or a combination of these measures. Hot

weather concreting procedures provided in ACI 305R shall be used when ambient conditions dictate.

2. Cold weather concreting procedures provided in ACI 306R shall be used when ambient conditions dictate.
3. Changes in air temperature immediately adjacent to the concrete during and immediately following the 7-day initial curing period shall be kept as uniform as possible and shall not exceed 5 deg. F in any 1 hour or 50 deg. F. in any 24-hour time period.

B. Curing Compound

1. All curing methods shall be placed immediately after final finishing (i.e., within two hours). Contractor's attention is directed to the fact that experience shows the most important time of curing is from three to four hours after placing and extending five to six hours thereafter. It is extremely important, therefore, to prevent loss of moisture, particularly during this period when concrete is especially vulnerable to plastic shrinkage cracks. All exposed surfaces of concrete including floor slabs, whether or not they receive a finish flooring, shall be protected from premature drying for a minimum of seven days.
2. Apply the specified curing compound in strict accordance with manufacturer’s written instructions. Curing compound shall not be diluted by the addition of solvents or thinners, nor shall it be altered in any other manner. Curing compound that has become chilled and is too viscous for satisfactory application shall be heated by steam or hot water bath until it has proper fluidity. The temperature of the compound shall not exceed 100 ºF. Curing compound shall not be heated by direct exposure of the container to fire.
3. When used on an unformed concrete surface, application of the first coat of curing compound shall commence immediately after finishing operations have been completed. When curing compound is used on a formed concrete surface, the surface shall first be moistened with a fine spray of water immediately after the forms have been removed. The spray shall be continued until the surface does not readily absorb further water. As soon as the surface film of water has disappeared and the surface is almost dry, the first coat of curing compound shall be applied. In the event that application is delayed on either formed or unformed surfaces, the surface shall be kept continuously moist until the compound has been applied or the specified period of water curing has elapsed.
4. Surfaces shall be sprayed uniformly with 2 coats of curing compound. Each coat shall provide a minimum coverage of 1 gallon per 250 square feet of surface. As soon as the first coat has become dry, a second coat shall be applied in the same manner. The direction of application of the second coat shall be perpendicular to the first coat. The curing compound shall be sprayed using approved pneumatic or pump driven equipment having the following characteristics:
    a. Separate lines to the nozzle for material and for compressed air
    b. A filtering system for the removal or entrapment of contaminants
    c. A constant application pressure
5. Curing compound shall not be used on any concrete surface specified to receive additional concrete, coatings, grout, and chemical treatment

C. Protection

1. Freshly placed concrete shall be protected against wash by rain.
2. Dust control shall be provided in the surrounding areas during placement. If, in the opinion of the Engineer, these conditions are not satisfactory met, concrete shall not be placed.
3. During the first 2-day period of curing, no traffic on or loading of the floors will be permitted.
4. The contractor shall allow no traffic and take precautions to avoid damage to the membrane of the curing compound for a period of not less than 28 days. Damage shall be repaired immediately to the satisfaction of the Engineer.
5. Special care shall be taken to prevent avoid damaging the surfaces and joints due to load stresses from construction equipment, heavy shock, and excessive vibration. During construction activities, concrete shall be protected against damage with plywood or other approved materials until final acceptance by the Engineer.

6. Precautions shall be taken to prevent overloading floors, pavements, slabs, beams, and other members. The Contractor shall comply with the Engineer's instructions regarding the loads that will be permitted on these members during construction.
7. Self-supporting structures shall not be loaded in such a way to overstress the concrete.

D. All floor slabs shall be cured using products and methods compatible with selected floor adhesives, toppings, and other finish materials.

3.8 PATCHING AND REPAIR

A. Concrete will be considered by the Engineer as not conforming to the intent of the drawings and specifications for the following reasons:
1. Concrete this is not formed as shown on the drawings.
2. Concrete this is not in true alignment or level.
3. Concrete which exhibits a defective surface.
4. Concrete with defects that reduce the structural integrity of a member or members.
5. Concrete jointed slabs with uncontrolled random cracking.

B. Non-conforming concrete to required thickness, lines, details, and elevations will be rejected by the Owner and shall be modified or replaced with concrete that conforms to the contract requirements without a claim by the Contractor for additional cost or extension of contract time.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Owner for each individual area. Should the Owner grant permission for the Contractor to attempt restoration of a defective area by patching or other repair methods, such permission shall not be considered a waiver of the Owner's right to require complete removal of the defective area if, in the Engineer's opinion, the restoration does not provide the structural or aesthetic integrity of the member or members.

D. All repairs of defective areas shall conform to ACI 301. On areas requiring treatment of defects and until such repairs have been completed, only water cure will be permitted

E. At any time prior to final acceptance, concrete found to be defective, damaged, or not in accordance with the specifications shall be repaired or removed and replaced with acceptable concrete.

F. If approved by the Owner, repair or replace concrete with excessive honeycombing due to improper placement.
1. Honeycombed areas shall be removed down to solid concrete a minimum of 1 inch over the entire area. Feathered edges will not be permitted. If chipping is necessary, the edges shall be perpendicular to the surface or slightly undercut.
2. Laitance and soft material shall be removed prior to patching with a pea gravel concrete mix and bonding agent approved by the Engineer.
3. The area to be patched and an area at least 6 inches wide surrounding it shall be dampened to prevent absorption of water from the patching materials.
4. If a cement slurry bonding grout is approved, the heavy-cream consistency grout shall then be rigorously brushed into the surface. The concrete patch material shall be installed prior to the bonding grout skimming over or drying.
5. If approved, a bonding admixture, bonding compound, or epoxy adhesive may be used in strict accordance with the manufacturer's preparation and application recommendations. Comply with ACI 301 and ACI 503.2 for standard specifications for bonding plastic concrete to hardened concrete with a multiple component epoxy adhesive.
6. The repair concrete shall be thoroughly consolidated in place and struck off so as to leave the patch slightly higher than the surrounding surface. The concrete shall be left undisturbed for at least 1 hour to permit initial shrinkage then finished.

7. The patched area shall be kept damp for 7 days.
8. The color of the patch material shall match the color of the surrounding concrete. Repairs shall be made promptly while the base concrete is less than 28 days old
9. Metal tools shall not be used in finishing a patch in a formed wall that will be exposed.

G. Areas requiring patching shall not exceed 2 sq. ft. per 1000 sq. ft. of surface area and shall be widely dispersed. Areas showing excessive defects as determined by the Owner shall be removed and replaced.

H. High spots identified in the floor flatness and levelness survey may be removed with bump grinding. Areas to be ground shall not exceed more than 10 percent of any one slab nor more than 5 percent of the total slab-on-grade area. There are no limitations for exterior concrete pavement areas requiring grinding.

I. If approved by the Owner's Representative, concrete slab random cracking may be routed and sealed. The number of slabs to be routed and sealed shall not exceed more than 20 feet in any one slab nor more than 5 percent of the total number of slab-on-grade/pavement slabs. Slabs with more than one structural crack or with multiple cracks within a slab shall be removed and replaced. Exterior slabs with hairline cracks that are allowed to be repaired may be routed and sealed with the flexible joint sealant to be installed in pavement joints.

3.9 EVALUATION AND ACCEPTANCE OF CONCRETE

A. Comply with ACI 301 and modifications in this section.

B. Compressive strength
1. Sets of standard-cured quality assurance cylinders will be taken by the Engineer during the progress of the work. The number of cylinder sets taken for each concrete mix design placed each day shall not be less than one set per day, nor less than one set for each 150 cu yds of concrete nor less than one set for each 5000 sq ft of surface area for slabs or walls.
2. A set of cylinders consists of five cylinders cured in accordance with ASTM C31: one to be tested at 7 days and two to be tested and their strengths averaged at 28 days in accordance with ASTM C31. The fourth and fifth cylinders may be used to test at other ages or to verify strength after 28 days in the event the 28-day strengths are low.
3. A 28-day compressive strength test shall consist of the average strength of at least two cylinders fabricated from a single load of concrete.
4. The strength level of the concrete will be considered satisfactory so long as the averages of all sets of three consecutive strength tests equal or exceed the specified strength, f'_c, by more than 500 psi, not more than 10 percent of the tests are less than the specified 28-day strength, and no individual test is more than 500 psi below the 28-day specified strength.
5. Should cylinder tests fail to meet the strength acceptance requirements or if deficient construction is suspected, core tests may be required and the costs of such tests paid by the Contractor. The Engineer shall identify core locations to least to impair the strength of the structure. Four-inch diameter cores shall be tested in accordance with ASTM C42.
6. At least three representative cores shall be drilled from each member or area of concrete that is considered potentially deficient. If before testing, one or more cores shows evidence of having been damaged subsequent to or during the removal from the structure, it shall be replaced.
7. Concrete in the area represented by core tests will be considered adequate if the average strength of the cores is equal to or at least 85 percent of and if no single core is less than 75 percent of the specified strength.
8. Concrete that is deficient shall be isolated and retested to establish the boundary of deficient concrete. Concrete in the deficient area shall be removed and replaced.
9. Core holes shall be repaired as directed by the Engineer.

C. Air content will be determined in accordance with ASTM C231. The air content shall be taken with each set of test cylinders. If the air content is outside the specified range, the concrete shall be rejected. If concrete is to be air entrained for freeze-thaw durability, cores will be located to isolate deficient concrete by evaluating the air-void system in accordance with ASTM C457. Concrete in the deficient area shall be removed and replaced.

D. Slump tests will be performed prior to placing the concrete. Such tests shall be made for each set of test cylinders defined for compressive strength. If the slump is outside the specified range, the concrete shall be rejected.

E. The frequency of testing shall be increased if concrete fails to meet the acceptance criteria or if deemed by the Engineer to be too variable.

3.10 ACCEPTANCE OF STRUCTURE

A. Comply with ACI 301 and modifications in this section.

B. Completed concrete work, which meets all applicable requirements, will be accepted without qualification.

C. Completed concrete work which fails to meet one or more requirements but which has been repaired to bring it into compliance will be accepted without qualification.

D. Completed concrete work which fails to meet one or more requirements and which cannot be brought into compliance may be accepted or rejected by the Owner. In this event, modifications may be required to assure that remaining work complies with the requirements.

E. The costs of any additional tests or analysis, including additional architectural and engineering services, performed to prove the adequacy of the concrete work, shall be borne by the Contractor without extension of contract time.

3.11 FIELD QUALITY CONTROL

A. Field testing and inspection.

B. Requirements:
   1. Provide and maintain an adequate program of quality control for the materials, production methods, and workmanship to assure conformance of all work to the project contract documents. ACI 121R outlines the essential elements of the Material Control portion of the QA program.
   2. All materials, equipment, and methods shall be subject to verification inspections and/or testing as specified herein; ACI 121R.
   3. Testing and Evaluation:
      a. Furnish and pay for the services of an independent Testing Laboratory satisfactory to the Owner’s Representative. The testing laboratory shall have prime responsibility for review, verification inspection, and testing of the concrete producer's materials, operations, facilities, and quality control procedures and evaluating the results for conformance with these specifications complying with ACI 121R.
      b. The Testing Laboratory will be required to provide evidence of recent inspection of its facilities by the Cement and Concrete Reference Laboratory of the National Bureau of Standards (NBS) and to show that any deficiencies have been corrected.

c. In addition to the requirements and duties in ACI 301 the testing laboratory shall provide the following:
   1) One or more additional test cylinders shall be taken during cold weather concrete placement and cured on the job site under conditions of concrete represented to determine safe form-stripping period.
   2) Sample (and test when directed by the Owner's Representative) each shipment of cement and aggregates and verify approved admixtures. Store samples in a protected place until authorized to dispose of them.
   3) Inspect concrete batching, mixing, and delivery operations periodically or as directed by the Owner's Representative.
   4) Review manufacturer's reports and/or certification for each shipment of cement and reinforcing steel and/or conduct laboratory tests or spot checks of the materials as received for compliance with specifications.
   5) Submit to the Owner's Representative and concrete producer, during construction, the results of concrete tests.
   6) Include the following information:
      i. Date of placement.
      ii. Structure and relative location.
      iii. The concrete mix design.
      iv. Unit weight of concrete - ASTM C138
      v. Slump - ASTM C143
      vi. Air content of freshly-mixed concrete by the pressure method, ASTM C231 or the volumetric method, ASTM C173.
      vii. Concrete temperature (at placement time).
      viii. Air temperature (at placement time).
      ix. Strength determined in accordance with ASTM C39.
      x. Other testing or inspection as required.

d. Field and concrete plant inspections are to be made by a competent representative of the Testing Laboratory during all structural concreting operations including periodic audit and spot check of the Producer's and/or Contractor's quality control procedures to assure proper and adequate control. When it appears that any material furnished fails to fulfill specification requirements, the Testing Laboratory is to report such deficiency immediately to the Owner and appropriately record it in his report.

END OF SECTION

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Polymer-modified, self-leveling, hydraulic cement underlayment for application below interior floor coverings.

1.3 SUBMITTALS

A. Manufacturer’s installation instructions shall be provided along with product data.

B. Product Data: For the following:

1. Hydraulic cement underlayment.
2. Primer.

C. Shop Drawings: Include plans indicating substrates, locations, and average depths of underlayment based on survey of substrate conditions.

D. Qualification Data: For Installer.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

B. Product Compatibility: Manufacturers of underlayment and floor-covering systems shall certify that the products are compatible.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.

1. Place hydraulic cement underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F.

PART 2 - PRODUCTS

2.1 HYDRAULIC CEMENT UNDERLAYMENTS

A. Hydraulic Cement Underlayment: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/4 inch up to 1-1/2 inch over large areas neat, and up to 4 inches with the addition of proper aggregate and that can be feathered at edges to match adjacent floor elevations.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Allied Custom Gypsum Plasterworks, LLC.
b. ARDEX Americas.
c. BASF Corporation.
d. Dayton Superior.
e. Euclid Chemical Company (The); an RPM company.
f. Maxxon Corporation.
g. USG Corporation.
h. Sika Corporation.
i. Approved equivalent.

2. Cement Binder: ASTM C150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C219.
3. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C109.

B. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch; or coarse sand as recommended by underlayment manufacturer.

1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.

C. Water: Potable and at a temperature of not more than 70 deg F.

D. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance of the Work.

B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent underlayment from leaking.

B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.

1. Moisture Testing: Perform tests so that each test area does not exceed **1000 sq. ft.**, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test, ASTM F1869: Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 85 percent relative humidity level measurement, or as recommended by hydraulic cement underlayment manufacturer.

C. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 INSTALLATION

A. Mix and install underlayment components according to manufacturer's written instructions.

1. Close areas to traffic during underlayment installation and for time period after installation recommended in writing by manufacturer.
2. Coordinate installation of components to provide optimum adhesion to substrate and between coats.
3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Install underlayment to produce uniform, level surface.

1. Install a final layer without aggregate to product surface.
2. Feather edges to match adjacent floor elevations.

D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during installation and curing processes.

E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 INSTALLATION TOLERANCES

A. Finish and measure surface, so gap at any point between hydraulic cement underlayment surface and an unleveled, freestanding, 10-foot- long straightedge resting on two high spots and placed anywhere on the surface does not exceed **1/4 inch**.

3.5 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 035416

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Preparing sealant substrate surfaces.
   2. Sealant and backing.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C717 - Standard Terminology of Building Seals and Sealants.
   2. ASTM C834 - Specification for Latex Sealants.
   3. ASTM C920 - Specification for Elastomeric Joint Sealants.
   4. ASTM D1056 - Flexible Cellular Material- Sponge or Expanded Rubber.

B. Federal Specifications (FS):
   1. FS SS-S-200 - Sealing Compounds, Two Component, Elastomeric, Polymer Type, Jet-Fuel Resistant, Cold Applied.
   2. FS TT-S-1657 - Sealing Compound, Single Component Butyl Rubber Based Solvent Release Type (for Buildings and other Types of Construction).

1.3 SUBMITTALS

A. Submittal Procedures: Procedures for submittals.
   1. Product Data: Product chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

B. Closeout Procedures and Training: Procedures for closeout submittals.
   1. Warranty: Submit manufacturer warranty with forms completed in Owner’s name and registered with manufacturer.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing Work of this Section with minimum 5 years documented experience.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver Products in manufacturer's original unopened containers or packages with labels intact, identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions, where applicable.

C. Store and handle materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements: Install sealant during manufacturer's recommended temperature ranges and weather conditions for application and cure. Consult manufacturer when sealant cannot be applied during recommended conditions.

1.7 WARRANTY

A. Closeout Procedures and Training: Procedures for closeout submittals.

B. Warranty:
1. Submit written warranty signed by sealant manufacturer agreeing to replace sealants and accessories which fail because of loss of cohesion or adhesion or which do not cure.
2. Warranty Period: 5 years or longer per the manufacturers' standard warranties.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated into the work include the following:
1. Bostik, Inc, Huntingdon Valley, PA, (800) 523-2678, (125) 674-5600.
2. Dow Corning, Midland, MI (517) 496-4000.
3. GE Silicones, Waterford, NY (518) 233-3330.
4. Mameco International, Cleveland, OH, (800) 321-6412, (216) 752-4400.
5. W.R. Meadows, Inc, Elgin, IL (800) 342-5976, (847) 683-4500.
6. Nomaco, Inc., Zebulon, NC, (919) 269-6500.
7. Pecora Corporation, Harleysville, PA, (800) 523-6688, (215) 723-6051.
8. Sika Corporation, Lyndhurst, NJ, (800) 933-7452, (201) 933-8800.
9. Sonneborn Building Products Div. ChemRex, Inc., Shakopee, MN (800) 243-6739, (612) 496-6000.
10. Tremco, Beachwood, OH, (800) 852-3821, (216) 292-5000.
11. USG Corp., Chicago, IL (800) 874-4968, (312) 606-4000.
12. Sherwin-Williams Co. (The), Cleveland, OH (800) 321-8194

2.2 BUILDING SEALANTS (See Sealant Schedule at the end of this Section for specific use of sealants.)

A. Urethanes:
1. Type 1: Two-Part Urethane: Self-Leveling, ASTM C920, Type M, Grade P, Class 25.
a. Chem-Calk CC-550, by Bostik.
b. Vulkem 245, by Mameco.
c. Vulkem 255, Wide-Joint, by Mameco.

d. NR-200 Urexpan, by Pecora Corporation.
e. Loxon 2K SL Multi-Comppnent Polyurethane Sealant, by Sherwin-Williams.

2. Type 2: Two-Part Urethane: Non-Sag, ASTM C920, Type M, Grade NS, Class 25.
   a. Chem-Calk 500, by Bostik.
   b. Vulkem 227, by Mameco.
   c. Sonolastic NP 2, by Sonneborn Building Products, ChemRex Inc.
   d. Loxon 2K NS Multi-Component Polyurethane Sealant, by Sherwin-Williams.
3. Type 3: One-Part Urethane: Self-Leveling, ASTM C920, Type S, Grade P, Class 25.
   a. Vulkem 45, by Mameco.
   b. Urexpan NR-201, by Pecora Corporation.
   c. Sonolastic SL1, by Sonneborn Building Products, ChemRex Inc.
   d. Sikaflex 1C-SL by Sika.
   e. Loxon 1K SL Polyurethane Sealant, by Sherwin-Williams.
4. Type 4: One-Part Urethane: Non-Sag, ASTM C920, Type S, Grade NS, Class 25.
   a. Chem-Calk 900, by Bostik.
   b. Vulkem 116, by Mameco.
   c. Sonolastic NP I, by Sonneborn Building Products, ChemRex Inc.
   d. Loxon 1K Smooth Polyurethane Sealant, by Sherwin-Williams.

B. Silicones:
1. Type 1: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 50.
   a. 795 Silicone Building Sealant, by Dow Corning.
   b. 864 Architectural Silicone Sealant, by Pecora Corporation.
   c. White Lightning Silicone Ultra Sealant, by Sherwin-Williams.
2. Type 2: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25.
   a. 999-A Silicone Building & Glazing Sealant, Dow Corning.
   b. Construction 1200 Sealant, General Electric Company.
3. Type 3: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
   a. Construction 1200 Sealant, General Electric Company.
   b. 999-A, Dow Corning.
   c. 860 Glaziers and Contractors Silicone Sealant, by Pecora Corporation. (colors only)
4. Type 4: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25 or 50.
   a. 786 Mildew Resistant Silicone Sealant, Dow Corning.
   b. SCS 1700 Sanitary Sealant, General Electric.
   c. 898 Silicone Sanitary Sealant, Pecora Corporation.

C. Acrylics, Latex:
1. Type 1: One-Part Acrylic Latex, Non-Sag, ASTM-C-834-76.
   a. Chem-Calk 600, by Bostik.
   b. LC-130, by MACCO Adhesives, The Glidden Company.
   c. Easa-ply ALS, by W. R. Meadows, Inc.
   d. AC-20+Silicone Acrylic Latex, by Pecora Corporation.
   e. Sonolac, Sonneborn Building Products, ChemRex Inc
   f. 950A Siliconized Acrylic Latex Caulk, by Sherwin-Williams..

D. Acoustical Sealants:
1. Type 1: AC-20 FTR Acoustical and Insulation Sealant, by Pecora Corporation.
2. Type 2: 60+ Unicrylic, by Pecora Corporation.
3. Type 3: Sheetrock Acoustical Sealant, by United States Gypsum.
4. Power House Siliconized Latex Caulk, by Sherwin-Williams

E. Butyls:
1. Type 1: One-Part Butyl, Non-Sag, FS TT-S-1657.
   a. Chem-Calk 300, by Bostik.
   b. BC-158 Butyl Rubber, by Pecora Corporation. (ASTM C1085)

c. White Lightning Butyl Rubber Caulk, by Sherwin-Williams. (ASTM C1311)

F. Preformed Compressible & Non-Compressible Fillers:
1. Type 1: Backer Rod - Closed cell polyethylene foam:
a. HBR Backer Rod, by Nomaco.
b. #92 Greenrod, by Nomaco.
c. Sonofoam Closed-Cell Backer Rod, Sonneborn Building Products, ChemRex Inc.
2. Type 2: Backer Rod - Open cell polyurethane foam:
a. Denver Foam, by Backer Rod Mfg Inc.
b. Foam Pack II, by Nomaco.
3. Type 3: Neoprene compression seals:
a. WE, WF, and WG Series, by Watson Bowman & Acme Corp.
b. Will-Seal 150 Precompressed Expanding Foam Sealants, by Will-Seal, a Division of Illbruck.
4. Type 4: Butyl Rod: Kirkhill Rubber Co. (714)529-4901.

G. Bond Breaker Tape: Polyethylene tape of plastic as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate of joint filler must be avoided for proper performance of sealant

2.3 COLORS

A. Generally, use sealant colors matching color of material joint is located in.

B. Where a joint occurs between two materials of differing colors and Contractor cannot determine which material to match, contact Owner for selection.

2.4 ACCESSORIES

A. Joint Cleaner: Provide type of joint cleaning compound recommended by sealant manufacturer for joint surfaces to be cleaned.

B. Primer: As recommended by sealant manufacturer.

C. Masking tape and similar accessories to protect surfaces from damage.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
1. Verify that joint widths are in conformance with sealant manufacturer allowable limits.
2. Verify that contaminants capable of interfering with adhesion have been cleaned form joint and joint properly prepared.

C. Report in writing to Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 PREPARATION

A. Prepare and size joints in accordance with manufacturer's instructions. Clean substrates of dirt, laitance, dust, or mortar using solvent, abrasion, or sandblasting as recommended by manufacturer. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Verify that joint backing and release tapes are compatible with sealant. Verify sealant is suitable for substrate. Verify that sealant is paintable if painted finish is indicated.

C. Protect materials surrounding work of this Section from damage or disfiguration.

3.3 INSTALLATION

A. Install sealant in accordance with manufacturer's published instructions.

B. Prime or seal joint surfaces where recommended by sealant manufacturer. Do not allow primer or sealer to spill or migrate onto adjoining surfaces.

C. Install backer rod and bond breaker tape where required by manufacturer.

D. Install preformed compressible and non-compressible fillers in accordance with manufacturer's published instructions.

E. Install sealants to depths recommended by sealant manufacturer in uniform, continuous ribbons free of air pockets, foreign embedded matter, ridges, and sags, "wetting" joint bond surfaces equally on both sides.

F. Tool joints concave unless shown otherwise. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form slight cove so that joint will not trap moisture and foreign matter. Dry tool joints. Do not use soap, water, or solvent to tool joints.

3.4 CURING

A. Cure sealants in compliance with manufacturer's published instructions.

3.5 CLEANING

A. Remove excess and spillage of sealants promptly as the work progresses, using materials and methods as recommended by sealant and substrate manufacturers. Clean adjoining surfaces to eliminate evidence of spillage without damage to adjoining surfaces or finishes.

3.6 SEALANT SCHEDULE

A. Interior Joints:
   1. Perimeters of interior hollow metal and aluminum frames.

2. Joints at intersection of exterior concrete walls and interior gypsum board partitions.
3. For all of the above interior joints:
    a. Sealant Urethane Type 2
    b. Sealant Urethane Type 4
    c. Sealant Silicone Type 1 (for prefinished materials only)
4. Exposed interior control joints in drywall and concealed joints.
    a. Sealant Acrylic, Latex, Type 1
    b. Sealant Acoustical Type 1
    c. Sealant Acoustical Type 3
    d. Sealant Butyl Type 1

END OF SECTION

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior non load-bearing steel stud framing and furring 20 gage and lighter.
   2. Metal furring.
   3. Wood blocking.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
   2. ASTM C 645 - Specification for Non-Structural Steel Framing Members.
   3. ASTM C 754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
   4. ASTM C 954 - Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 inches to 0.112 inches in Thickness.

B. United States Department of Commerce Product Standard (PS):
   1. PS 20 - American Softwood Lumber Standard.

C. Southern Pine Inspection Bureau (SPIB):
   1. Grading Rules.

D. Western Wood Products Association (WWPA):
   1. Western Lumber Grading Rules.

1.3 SUBMITTALS

A. Submittal Procedures: Procedures for submittals.
   1. Product Data:
      a. Framing Members: Standard materials and finish, product criteria, sizes and lengths, load charts, and limitations.
      b. Fasteners and Anchorage Devices: Standard materials and finish, sizes, and load charts.
   2. Shop Drawings:
      a. Indicate prefabricated work, component details, framing layout, framed openings, anchorage to structure, type and location of fasteners, and accessories or items required of other related work.
      b. Indicate methods of securing studs and framing to tracks, splicing, suspension, and for blocking and reinforcement to framing connections.

1.4 QUALITY ASSURANCE

A. Qualifications:
1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.

B. Protect metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

C. Store and protect metal framing with weatherproof covering, and ventilate to avoid condensation.

D. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Manufacturers: Subject to compliance with project requirements, alternate manufacturers offering specified items which may be incorporated in the Work include the following:
a. Dale/Incor, Dearborn, MI (800) 882-7883.
b. National Gypsum Company, Gold Bond Building Products, Charlotte, NC. (800) 628-4662.
c. Clark Steel Framing Systems, Middletown, OH (800) 543-7140.

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Interior Nonload-Bearing Partition Framing: ASTM A 653 and ASTM C 645; galvanized sheet steel, channel shaped, punched for utility access, depth as indicated on Drawings, gauges as indicated below unless indicated on Drawings.
1. 3-5/8 Inch Studs - Unbraced Length 17 Feet or Less: Minimum 20 gauge.
2. Limiting heights are for 5/8 inch thick gypsum board panels on each side of partition and 5 pounds per square foot uniform load perpendicular to partition.
3. For heights greater than listed above provide framing in conformance with ASTM C754 Limiting Height Tables, except no framing shall be less than 20 gauge.

B. Partition Floor Tracks and Runners: ASTM A 653 and ASTM C 645; galvanized sheet steel, channel shaped, same depth and gauge as studs, tight fit; solid web.

C. Wall Furring and Partition Bracing: ASTM A 653 and ASTM C 645; galvanized sheet steel.
1. Studs: 3-5/8 inch deep, 20 gauge.
2. Clip Angles: 2 inches x 2 inches x 16 gauge x 1/4 inch less than stud width.

D. Partition Framing Fasteners: Corrosion-resistant self-drilling self-tapping steel screws.
   1. 20 Gauge and Heavier Framing: ASTM C 954; 5/8 inch Type S-12 low-profile head.

E. Partition Floor Track Anchorage Device: Low velocity powder-actuated drive pins; minimum 0.140 inch shank diameter x 1-1/2 inch shank length with 7/8 inch diameter washer.
   1. DX 451 System using X-DNI Pins with R23 washers, by Hilti, Tulsa, OK. (800) 879-8000.
   2. Ramset/Red Head System using 4700SD Pins, by ITW Ramset/Redhead, Wood Dale, IL (708) 350-1858.
   3. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

F. Wood Blocking Attached to Partition Framing:
   1. PS 20; S4S. Maximum of 19 percent moisture content, surfaced dry, No. 2 any species graded under WWPA grading rules or No. 3 Grade Southern Pine graded under SPIB grading rules.
   2. Full sized, sound lumber without splits, warps, wane, or loose knots.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify that building framing components are ready to receive Work.
   2. Verify that rough-in utilities are in-place and located where required.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 INSTALLATION

A. Install studs and fasteners in accordance with manufacturer's published instructions and ASTM C 754.

B. Metal Stud Spacing: 16 inches on center, maximum.

C. Align stud web openings horizontally.

D. Splice studs with minimum 8 inch nested lap, fasten each stud flange with minimum two screws.

E. Construct corners using minimum three studs.

F. Double stud at wall openings and door jambs, maximum 2 inches from each side of openings.

G. Place studs as indicated on Drawings, minimum 2 inches from abutting walls.

H. Install framing between studs for attachment of mechanical and electrical items.

I. Install intermediate studs above and below openings to match wall stud spacing.

J. Fasten studs adjacent to door frames, partition intersections, and corners to top and bottom runner flanges in double-stud fashion with metal lock fastener tools.
1. Securely fasten studs to jamb and head anchor clips of door and borrowed-light frames.
2. Place horizontally a cut-to-length section of runner with web-flange bend at each end, fasten with minimum one screw per flange.
3. Position a cut-to-length stud (extending to top runner) at vertical panel joints over door frame header.

K. Blocking: Screw attach wood blocking between studs for support of surface mounted items.
1. Plumbing fixtures.
2. Wall cabinets.
3. Hardware.
4. Architectural woodwork.
5. Other items requiring backing for attachment.

L. Framing Fastening: Fasten framing in accordance with manufacturer's published instructions and schedule below, unless indicated otherwise on Drawings.

CONNECTION	FASTENER
Floor and Top Track to Concrete	1 - Pin at 32 inches on center.
Partition Stud to Floor Track	1 - Screw each side at each flange.
Plates and Straps to Studs	2 - Screws.
Stud Web to Stud Web	2 - Screws.
Runner to Header	1 - Screw at 16 inches on center, max. 6 inches from each end.

3.3 CONSTRUCTION

A. Interface with Other Work:
1. Coordinate erection of studs at openings and with hollow metal door frames.
2. Coordinate installation of anchors, supports, and blocking for mechanical, electrical, and building accessory items installed within framing.

B. Site Tolerances:
1. Maximum Variation From True Position: 1/8 inch in 10 feet.
2. Maximum Variation From Plumb: 1/8 inch in 10 feet.

3.4 FIELD QUALITY CONTROL

A. Inspect metal framing erection, placement, spacing, fasteners, and connections to building.

END OF SECTION

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Gypsum board and joint treatment.
   2. Finishing.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 092216 - Non-Structural Metal Framing: Metal framing for attachment of gypsum board.
   2. Section 099100 - Painting: Field paint finish on gypsum board.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C36 - Specification for Gypsum Wallboard.
   2. ASTM C79 - Test Method for Gypsum Sheathing Board.
   3. ASTM C557 - Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
   4. ASTM C630 - Specification for Water-Resistant Gypsum Backing Board
   5. ASTM C954 - Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs From 0.033 inches to 0.112 inches in Thickness.
   6. ASTM C1002 - Specification Steel Drill Screws for the Application of Gypsum Panel Products.
   7. ASTM C1177 - Specification for Glass Mat Gypsum Substrate for Use As Sheathing.
   8. ASTM C1178 - Specifications for Glass Mat Water Resistant Gypsum Backing Panel.
   9. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
   10. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.

B. Gypsum Association (GA):
   1. GA-214 - Recommended Levels of Gypsum Board Finish.
   2. GA-216 - Application and Finishing of Gypsum Board.
   3. GA-253 - Application of Gypsum Sheathing.
   4. GA-600 - Fire Resistance Design Manual.

1.3 SUBMITTALS

A. Submittal Procedures: Procedures for submittals.
   a. Product Data: Data on gypsum board, joint materials, and finish materials.

1.4 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
   2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.

B. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

C. Stack gypsum board flat to prevent sagging.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Jobsite Requirements:
   1. Establish and maintain environmental conditions for applying and finishing gypsum board in conformance with GA-216.
   2. Maintain minimum 50 degrees F for 48 hours before application and finishing of gypsum board. Maintain temperature continuously until dry. Do not exceed 95 degrees F when using temporary heat sources.
   3. Ventilate building spaces as required to dry joint treatment materials. Prevent drafts during hot, dry weather to avoid finishing materials from drying too rapidly.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Resource Management:
   1. Recycled Content: Provide gypsum board products with paper backing manufactured from 100 percent post-consumer recycled paper and gypsum core containing minimum 10 percent recycled gypsum.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
   1. Georgia-Pacific Gypsum Products, Atlanta, GA (800) 225-6119.
   2. National Gypsum Company, Gold Bond Building Products, Charlotte, NC (800) 628-4662.
   3. United States Gypsum Company, Chicago, IL (800) 874-4968.
   4. Allied Stud Co., Phoenix, AZ, (800) 877-8823.
   5. Consolidated Fabricators Corp., Paramount, CA, (800) 635-8335
   6. Steeler, Inc., Seattle, WA (800) 275-2279
   7. Western Metal Lath, Inc., Riverside, CA (909) 360-3500

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Standard Gypsum Board: ASTM C 36; 1/2 inch and 5/8 inch thick 48 inch width, maximum permissible length; ends square cut, tapered edges.

B. Gypsum Board Fasteners:
   1. Metal Framing: ASTM C 954 and C 1002, Type S-12 bugle head, corrosion-resistant self-drilling self-tapping steel screws.
      a. One Layer 1/2 Inch: 1 inch.
      b. One Layer 5/8 Inch: 1-1/8 inch.

C. Gypsum Board Accessories:
   1. Corner Beads: 1 1/4 inch by 1 1/4 inch galvanized steel corner bead.
   2. Edge Trim: Galvanized steel casing.
      a. L bead for tight abutment at edges.
      b. J bead at other locations.
   3. Control Joint: No. 093 roll-formed zinc.
   4. Joint Materials:
      a. Reinforcing Tape: Sheetrock Joint Tape. Paper; fiberglass joint tape not permitted.
      b. Joint Compound: Ready-Mixed All-Purpose Joint Compound.
      c. Adhesive: Commercial Adhesive complying with ASTM C 557.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

E. Design non-axial load-bearing framing to accommodate 1/2 inch (13 mm) vertical deflection.

3.2 INSTALLATION

A. Install gypsum board in accordance with manufacturer's published instructions, GA-201 and GA-216.

B. Where applicable, install ceiling panels before the installation of wall panels.

C. Erect single layer gypsum board in most economical direction, with attachment to firm bearing surfaces over framing members. Do not align panel joints with edges of openings.

D. Place gypsum panels over supporting framing members with panel ends aligning and parallel with framing members.

E. Install fasteners from center of field of panel toward ends and edges. Install fasteners 3/8 inch from ends and edges of panels, and as follows:
   1. Ceiling: 12 inches on center, perimeter and field.
   2. Walls: 16 inches on center, perimeter and field.

3.3 GYPSUM SHEATHING INSTALLATION

A. Install gypsum board sheathing in accordance with manufacturer's published instructions, GA-216, GA-253 and GA-600, all latest editions.
   1. Erect single layer gypsum board horizontally, with edges butted tight, tongue up with attachment to firm bearing. Glass mat embedded board may be installed horizontally or vertically.

B. Provide construction control joints at maximum 30 feet on center, at inside corners, and at intersections.
   1. Locate panel, allowing 1/4 inch space between edge of panel and adjacent walls, beams, columns, and fascia construction.

C. Place edge trim where gypsum board abuts dissimilar materials. Use longest practical length.

D. Using screws, secure panels in place at maximum 12 inches on center to supporting substrate.

E. Protect all exposed gypsum core at perimeter edges, and penetrations by covering core with metal trim.

3.4 JOINT TREATMENT

A. Reinforce interior and exterior corners at ceiling and wall surfaces. Apply 3 inch wide initial coating of joint compound, pressing tape firmly into joint compound. Wipe off excess joint compound. Apply second coat of joint compound with tools of sufficient width to extend beyond joint center, approximately 4 inches. Draw joint compound down to a smooth even plane.

B. After drying or setting, sand or sponge joints, edges, and corners, eliminating high spots and excessive joint compound to produce smooth finish surface. Prepare surfaces to receive subsequent finishes to height of 6 inches above finish ceiling. Feather coats onto adjoining surfaces resulting in maximum camber of 1/32-inch in 12.

C. Sand after second and third applications of joint compound. Do not to raise nap of paper when sanding.

D. Install control joints full height of partition, consistent with lines of building spaces, with 1/2 inch between boards. Apply sealant at base of joint and control joint accessory piece at face.

E. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

3.5 FINISH

A. Apply gypsum board finish in accordance with manufacturer's published instructions and GA-214 Finish Levels.
   1. Level 1: All joints and interior angles shall have tape embedded in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
      a. Application: In plenum areas above ceilings, in attics, in mechanical rooms, in areas where the assembly is generally concealed, and other areas not normally open to view. Accessories not required, unless shown or required by rating. Where a fire resistance rating is required for the gypsum board assembly, details of construction shall be in accordance with reports of fire tests of assemblies that have met the fire rating requirement.
   2. Level 4: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Prepared surface shall be coated with a drywall primer/sealer prior to the application of finish paint. Refer to specification section 099100.
      a. Application: For use where gloss semi-gloss, enamel, or nontextured flat paints are specified or where severe lighting conditions occur. Generally in all areas except where noted otherwise.

3.6 CONSTRUCTION

A. Interface with Other Work:
   1. Coordinate installation of joint sealers specified in Section 079200 at penetrations of non fire-restive rated partitions.

END OF SECTION

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SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Suspended metal grid ceiling system.
   2. Acoustical panels.
   3. Perimeter trim.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C 635 - Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
   2. ASTM C 636 - Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
   3. ASTM E 84 Test Method for Surface Burning Characteristics of Building Materials.
   4. ASTM E 580 - Specification for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Rigidly secure acoustical ceiling system including integral mechanical and electrical components with maximum deflection of 1/360.

1.4 SUBMITTALS

A. Submittal Procedures: Procedures for Submittals.
   1. Product Data: Metal grid suspension system components and acoustical panel units.
   2. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to system.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of this Section with minimum 5 years documented experience.

B. Regulatory Requirements: Surface Burning Characteristics in Accordance with ASTM E 84 for Class III or C finish:
   1. Flame Spread: Less than 200.
   2. Smoke Density: Less than 450.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section 016000 - Product Requirements Transport, handle, store, and protect products.

B. Deliver acoustical units in manufacturer's original unopened containers with brand name and type clearly marked.

C. Store under cover in dry, watertight conditions.

D. Prior to installation, store acoustical units for 24 hours minimum at same temperature and relative humidity as space where Work will be installed.

1.7 PROJECT CONDITIONS

A. Jobsite Requirements: Maintain uniform temperature range of 60-85 degrees F, and humidity of no more than 70 percent relative humidity prior to, during, and after installation.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Resource Management:
   1. Recycled Content:
      a. Acoustical panels type ACT-1: Manufactured from minimum 20 percent recycled newsprint.
      b. Suspension system: Manufactured from minimum 20 percent recycled steel.

1.9 MAINTENANCE

A. Extra Materials: Provide 1 box of extra acoustical panels for each panel type, pattern, and color to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Suspension System: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Armstrong World Industries, Incorporated, Lancaster, PA (800) 448-1405.
   2. Chicago Metallic Corporation, Chicago, IL (800) 323-7164.
   3. USG Interiors, Chicago, IL (800) 950-3839.
   4. Certainteed Ceilings (800) 346-7978

B. Acoustical Panels: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Armstrong World Industries Incorporated, Lancaster, PA (800) 448-1405.
   2. USG Interiors, Chicago, IL (800) 950-3839.
   3. Certainteed Ceilings (800) 346-7978

C. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 SUSPENSION SYSTEM

A. Model:
1. Armstrong: Prelude 15/16 inch Exposed Tee System.
2. Chicago Metallic: 1200 System.
3. USG: Donn DX System.
4. Certainteed: Classic Stab CS12-12-15

B. Description:
1. Grid: ASTM C 635, heavy duty, steel exposed T; nominal 1 inch width; stab-in connections.
2. Accessories: Stabilizer bars, clips, and splices.
3. Grid Finish: White.
4. Support System: Hot or cold rolled steel channels; galvanized hanger wire, minimum 12 gage.
5. Edge Moldings: Metal channel with exposed flange to match suspension system.

2.3 ACOUSTICAL PANELS

A. Type ACT-1:
1. Model:
a. Armstrong: Fine Fissured #1729.
b. Certaineed : HHF – 157
c. USG: Auratone, Radar #2310.
2. Description:
a. Size: 24 x 48 x 5/8 inches.
b. Edge: Square lay-in.
c. Weight: minimum 0.60 pounds per square foot.
d. Surface Finish: Factory-applied vinyl latex paint, perforated, and scored.
e. Color: White.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
1. Verify that layout of hangers will not interfere with other Work.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 INSTALLATION - SUSPENSION SYSTEM

A. Install system in accordance with ASTM C 636 and ASTM E 580 and manufacturer's published instructions.

B. Provide metal hanger tabs and clips attached to metal deck where required for attachment of suspension wires.

C. Hang system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members. Where ducts or other equipment prevent regular spacing of hangers, reinforce nearest affected hangers and related carrying channels to span extra distance.

D. Locate system on room axis according to Reflected Ceiling Plan, where indicated on Drawings, or locate system to a balanced grid design with edge units no less than 50 percent of acoustical panel size where Reflected Ceiling Plan not shown on Drawings

E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Do not eccentrically load system, or produce rotation of runners.

F. Install edge molding at intersection of ceiling and vertical surfaces using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions. Secure at 16 inches (41 cm) on center.

G. Install hold-down clips within five feet of doors.

H. Rivet cross tee's at 4 feet on center to edge mould.

I. Install compression struts and secure system with tie wires.
   1. Provide hanger wires, splayed 45 degrees, within 3 inches of intersection between main runner and cross runner.
   2. Provide compression strut and splayed hanger wires as follows:
      a. One assembly for each light fixture.
      b. Located within 6 feet of wall.
      c. Located at maximum 12 feet on center or as indicated on Drawings.

3.3 INSTALLATION - ACOUSTICAL PANELS

A. Fit acoustic units in place free from damaged edges or other defects. Install acoustic units level, in uniform plane, and free from twist, warp, and dents.

3.4 CONSTRUCTION

A. Interface with Other Work:
   1. Do not install acoustical ceilings until building is enclosed, heating is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
   2. Schedule installation of acoustic units after interior wet work is completed.
   3. Install after major above ceiling work is complete.
   4. Coordinate location of hangers with other Work.

B. Site Tolerances:
   1. Variation from Flat and Level Surface: 1/8 inch in 12 feet.

3.5 FIELD QUALITY CONTROL

A. Inspect acoustical panel placement, ceiling grid suspension system installation and connection to structure.

3.6 CLEANING

A. Section 017300 - Execution: Cleaning installed Work.

B. Clean exposed surfaces of acoustical ceilings including trim, edge mouldings, and suspension system members.

END OF SECTION

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SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Surface preparation and field application of paints and finishes for interior surfaces.
   2. Schedule of Items to be painted.
   3. Interior painting and finishing schedule.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Submittal Procedures: Procedures for submittals.
   1. Product Data: Submit product data for each type of paint specified.
      a. Technical data sheets indicating manufacturer's catalog number, paint type description, and VOC content.
      b. Painting Schedule listing surfaces to be painted with cross reference to the specific painting and finishing system and application. Identify each paint material by manufacturer's catalog number and general classification.
   2. Assurance/Control Submittals:
      a. Test Reports: Submit manufacturer's Material Safety Data Sheets (MSDS) for each paint type proposed.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing Work of this Section with minimum five years documented experience.

B. Regulatory Requirements:
   1. Surface Burning Characteristics in Accordance with ASTM E-84 for Class I or A finish:
      a. Flame Spread (Non-Combustible Surfaces): Less than 25.
      b. Smoke Density (Non-Combustible Surfaces): Less than 450.
   2. Provide paint and coating materials that conform to Federal, State, and Local restrictions for Volatile Organic Compounds (VOC) content.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver paint materials in sealed original labeled containers, bearing 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/or reducing.

C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's published instructions.

D. Prevent fire hazards and spontaneous combustion.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements:
1. Apply paint finishes only when moisture content of surfaces is within manufacturer's acceptable ranges for type of finish being applied.
2. Surface temperatures or surrounding air temperatures to be above 40 degrees F before applying alkyd finishes; above 45 degrees F for interior latex, and 50 degrees F for exterior latex work. Minimum for varnish and transparent finishes is 65 degrees F.
3. Provide continuous ventilation and heating facilities to maintain temperatures above 45 degrees F for 24 hours prior to, during and 48 hours after application of finishes.
4. Do not apply paint in areas where dust is being generated.
5. Provide lighting level in areas being painted of 80-foot candles measured mid-height at substrate surface.

1.7 MAINTENANCE

A. Closeout Procedures and Training: Procedures for closeout submittals.

B. Extra Materials:
1. Provide one gallon of each color, type and sheen to Owner.
2. Label each container with color, type, texture, room locations, in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the work include the following:
1. Benjamin Moore and Company, Montvale, NJ (201) 573-9600.
2. Devoe (ICI), Cleveland, OH (888) 681-6353.
3. Glidden (ICI), Cleveland, OH (888) 681-6353.
4. Pittsburgh Paints, Pittsburgh, PA (800) 441-9695.
5. Sherwin-Williams Company, Cleveland, OH (800) 321-8194.

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Paints:
1. Manufacturer's "Best Grade" for each type specified.
2. Ready-mixed; pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
3. Providing good flowing and brushing properties and be capable of drying or curing free of streaks or sags.
4. VOC limits (g/L) for exterior and interior paint applications:

a. Interior Plaster, Gypsum Board
1) Undercoater: 200
2) Top Coat - Flat: 100
3) Top Coat – Non-Flat: 150
4) Top Coat – Gloss: 250

B. Primers and Undercoaters: Manufactured by same manufacturer as finish coat materials.

C. Paint Accessory Materials: Linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified of high quality and approved manufacturer.

2.3 INTERIOR PAINT SYSTEMS

A. Benjamin Moore:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
a. Primer: 284 Moorecraft Superhide Interior Latex Primer/Undercoater; MDF 1.5 mils.
b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
2. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.
a. Primer: 253 Moorecraft Latex Enamel Undercoater and Primer Sealer; 2.0 mils.
b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
3. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Moorecraft Super Hide Interior/Exterior Latex Blockfiller 285; MDF 11.0 mils.
b. Each Finish Coat: 276 Moorecraft Acrylic Latex; MDF 1.5 mils.

B. Devoe (ICI):
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
a. Primer: Wonder-Tones Primer DR50801; MDF 1.5 mil.
b. Each Finish Coat: Wonder-Tone Eggshell Enamel DR34XX; MDF 1.5 mil.
2. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.
a. Primer: Wonder-Prime DR51701; MDF 1.5 mil.
b. Each Finish Coat: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
3. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Bloxfil 4000 Interior/Exterior Heavy-Duty Acrylic Block Filler 4000-1000; 7.0-14.5 MDF
b. Each Finish Coat: Mirrolac W/B Semi-Gloss Latex Enamel DP83XX; MDF 1.5 mil.

C. Glidden (ICI):
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
a. Primer: ProMaster Interior Latex Primer-Sealer MP-5111; MDF 1.5 mil.
b. Each Finish Coat: ProMaster Interior Latex Eggshell MP-6800; MDF 1.5 mil.
2. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.

a. Primer: Prime Interior 100% Acrylic Multi-Purpose Latex Stain Killer, PC 1000; MDF 1.5 mil.
b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

3. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Bloxfil 4000 Interior/Exterior Heavy Duty Acrylic Block Filler 4000-1000; MDF 11 mil
b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

D. Pittsburgh:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
a. Primer: 6-2 Speedhide Latex Sealer; MDF 1.0 mils.
b. Each Finish Coat: 6-411 Speedhide Eggshell Latex; MDF 1.5 mils.
2. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.
a. Primer: 6-855 Interior Water Base Undercoater; MDF 1.5 mils.
b. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.
3. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: 6-7 Speedhide Block Filler; MDF 6.0 - 12.0 mils.
b. Each Finish Coat: 6-500 Speedhide Semi-Gloss Latex; MDF 1.2 mils.

E. Sherwin Williams:
1. Gypsum Board: Low VOC, Eg-shell, Water Base, Acrylic Latex.
a. Primer: Harmony Latex Primer, MDF 1.6 mils.
b. Each Finish Coat: Harmony Latex Eg-Shel, MDF 1.6 mils.
2. Wood and Wood Doors: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: PrepRite Classic Wall & Wood Primer, B28W10108111, MDF 1.6 mils.
b. Each Finish Coat: ProClassic Pro Industrial Waterborne Alkyd Urethane S-G B53-1150 Series, MDFSeries, MDF 1.4 mils.
3. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Loxon Concrete & Masonry Primer; MDF 10.0 mils.
b. Each Finish Coat: Pro Industrial Waterborne Alkyd Urethane S-G B53-1150 Series, MDF 1.4 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 PREPARATION

A. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, and conditions otherwise detrimental to formation of a durable paint film.

B. Perform preparation and cleaning procedures in accordance with paint manufacturer's published instructions for each particular substrate condition.
   1. Provide barrier coats over incompatible primers or remove and reprime as required.
   2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be painted or provide surface applied protection prior to surface preparation and painting operations. Reinstall all removed items after completion of paint work.
   3. Clean surfaces to be painted before applying paint of surface treatment. Remove oil and grease prior to mechanical cleaning.

C. Cementitious Materials: Prepare cementitious surfaces to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.
   1. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests.
      a. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct condition before application of paint.
   2. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed instructions.
   3. Clean floor surfaces scheduled to be painted with a commercial solution of muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid and allow to dry before painting.

D. Wood: Clean wood surfaces to be painted of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes, and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.
   1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends faces, undersides, and backsides of such wood, including cabinets and counters.
   2. Seal tops, bottoms, and cut-outs with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

E. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

3.3 APPLICATION

A. Apply paint products in accordance with manufacturer's published instructions using application procedures approved for the particular application and substrate to the specified Minimum Dry Film Thickness (MDF). Apply each coat to uniform finish.

B. Apply each coat slightly darker than preceding coat unless otherwise approved by Owner. Sand lightly between coats to achieve specified finish.

C. Do not apply finishes on surfaces that are not dry.

D. Number of coats and film thickness required is same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.

E. Apply additional coats when undercoats, stains, or other conditions show through final coat until paint film is of uniform finish, color, and appearance. Surfaces, including edges, corners,

crevices, welds, and exposed fasteners to receive minimum dry film thickness equivalent to that of flat surfaces.

F. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate. Provide minimum dry film thickness (MDF) of the entire coating system as indicated in Painting and Finishing Schedule at end of this Section.

G. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by manufacturer to material scheduled to be painted or finished that has not been shop primed. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

H. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, laps, brush marks, runs, sags, or other surface imperfections will not be acceptable.

I. Hollow Metal Doors: Paint each door edge.

J. Completed Work: Match existing adjacent painted concrete for color and sheen.

3.4 MECHANICAL AND ELECTRICAL EQUIPMENT

A. Clean or replace identification markings on mechanical or electrical equipment when painted over or spattered.

3.5 FIELD QUALITY CONTROL

A. Inspect painting and coating application for scheduled material, color, sheen, specified thickness (MDF), and coverage.

3.6 CLEANING

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered.

B. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

D. Upon completion of work leave premises neat and clean.

3.7 PROTECTION

A. Protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.

3.8 SCHEDULE OF ITEMS TO BE PAINTED

A. Painted finishes shall be provided for, but not limited to, the following items.
   1. Interior: All interior surfaces as indicated on Drawings including, but not limited to:
      a. Hollow metal doors and frames.
      b. Hollow metal window frames.
      c. Metal opening frames and trim.
      d. Gypsum wallboard.
      e. Exposed concrete slab, joists, and beams underside.

3.9 PAINTING AND FINISHING SCHEDULE

A. Interior Paint Systems:
   1. Interior Gypsum Wallboard:
      a. 1 coat Latex Wall Primer.
      b. 1 coat Latex Eggshell Enamel

   2. Interior Wood (painted):
      a. 1 coat Enamel Undercoat
      b. 2 coats Alkyd Semi-Satin Enamel

   3. Cast-In-Place Concrete:
      a. One coat of Latex Masonry Block Filler.
      b. Two tinted coats of Acrylic Latex Semi-Gloss Enamel.

   4. Wood Doors - Painted.
      a. One coat Enamel Undercoat.
      b. Two tinted coats of Latex Semi-Gloss Enamel.

   5. Wood Cabinets, Shelves, etc. - exposed surfaces.
      a. One coat Primer-Sealer.
      b. One coat Enamel Undercoat.
      c. One coat Alkyd Enamel Semi-Gloss Enamel.

END OF SECTION

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SECTION 312323.33 - CONTROLLED LOW-STRENGTH MATERIAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Requirements for controlled low strength material (CLSM) as backfill material in specific locations.

1.3 DEFINITIONS

A. Controlled Low Strength Material (CLSM): A highly flowable, lean concrete mix consisting of a mixture of cement, fly ash, densely graded mineral aggregates, water and admixtures with a compressive strength less than 1200 psi. Characteristics include:

1. Capable of freely flowing to fill excavations and voids without compaction or other additional effort.
2. Used in trenches and for backfill adjacent to structures where clearance is limited, and in other areas specifically identified on the Drawings or specified.
3. Low permeability to prevent migration of adjacent fines into the set mix.
4. Easily excavated after curing with minimum risk of damage to buried utility.

1.4 SUBMITTALS

A. Mix Design: Identify name and/or number of the mix design. Provide the proportions and gradations of materials proposed for CLSM.

B. Placement plan for filling underground return air ducts.

C. Certified test results for compressive strength.

1.5 QUALITY ASSURANCE

A. Demonstrate that the CLSM mix meets the specified requirements, including compressive strength.

B. Enlist the services of a testing laboratory to prepare test cylinders and to transport cylinders to the laboratory for testing.

C. Testing expenses shall be borne by the Contractor.

D. Test Cylinders

1. Procedure: Make 6-inch diameter by 12-inch high test cylinders in accordance with ASTM C31.
2. Required Number: Not less than 3 cylinders for each 200 cubic yards of CLSM placed, with a minimum of 3 cylinders for each location where CLSM is used.
3. Test two cylinders at 28 days, third cylinder is spare.

E. Field Testing: Furnish slump testing equipment and test slump in accordance with ASTM C143.

PART 2 - PRODUCTS

2.1 GENERAL

A. CLSM Mix: A mixture of Portland cement, fly ash, aggregate, water, and admixtures that produce a material of controlled density and of low compressive strength capable of filling all spaces in the underground return air ducts.

2.2 MATERIALS

A. Cement: Conforming to ASTM C150, Type II or III with total alkali content not more than 0.8 percent.

B. Water: Clean, potable water.

C. Fly Ash

1. Class C or F in conformance with ASTM C618.

D. Aggregate Materials

1. Densely graded rock conforming to the following gradation:

Sieve Size	Percentage Passing
1”	100
No. 8	50-100
No. 200	0-5

2.3 DESIGN REQUIREMENTS

A. Water-cement Ratio: Not to exceed 3.5.

B. Minimum Cement Content: 50 pounds per cubic yard.

C. Use fly ash to improve flow-ability of the fresh CLSM and to regulate the strength. Do not use more than 300 pounds per cubic yard.

D. Unit Weight Requirements

1. Density of CLSM when used as backfill of excavations: Between 100 pounds per cubic foot and 130 pounds per cubic foot in the as-placed condition as determined by ASTM D6023.

E. Compressive Strength Requirements

1. Mix Designs: Compressive strength at 28 days between 100 psi and 300 psi as determined in accordance with ASTM D4832.

2.4 CONSISTENCY AND MIXING

A. Consistency: Similar to that of a thick liquid so that it flows readily and fills spaces and voids in underground return air ducts.

B. Slump: Between 6 inches and 8 inches when tested in accordance with ASTM C143.

C. Uniform consistency and appearance.

D. Mixing Method and Time: As required to produce a uniform mixture of cement, fly ash, aggregate, admixtures, and water.

2.5 MEASUREMENT OF MATERIALS

A. Use weighing equipment to determine the amount of cement, fly ash, and aggregate entering into each batch. Where batches are proportioned to contain an integral number of conventional sacks of cement, and the cement is delivered at the mixer in the original unbroken sacks, the weight of the cement contained in each sack may be taken without weighing as 94 lbs.

B. Use a suitable water meter or other acceptable method of measuring the quantity of water entering the mixer

PART 3 - EXECUTION

3.1 PLACEMENT

A. Thoroughly settle and consolidate CLSM as the material is placed in excavations. Fill the entire depth of the layer that is being consolidated, into a dense, homogeneous mass, filling all spaces and voids and bringing only a slight excess of water to the exposed surface. Place and consolidate CLSM by means that will not cause segregation of the mix.

B. Do not place CLSM under the following conditions:

1. When the air temperature is below 40 degrees Fahrenheit.
2. When the excavation contains water or when the bottom or walls of the excavation are frozen or contain frozen material.

C. Placement of CLSM in Excavations: Limit lift thickness to 10 feet, place subsequent lifts after CLSM has achieved the minimum specified compressive strength

3.2 PROTECTION OF CLSM

A. Protect CLSM from equipment, traffic and backfilling operations until the surface has achieved an initial set and has hardened enough to develop a minimum penetration number of 650 when tested in accordance with ASTM C403.

B. If the trench backfill is not to be placed over the CLSM within eight hours after CLSM placement, place a 6 inch layer of moist backfill over the CLSM.

END OF SECTION

ATTACHMENT C

DIVISION 1- GENERAL REQUIREMENTS

1.1 CONSTRUCTION MEANS AND METHODS

A. CONTRACTOR AGREES THAT CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF THE WORK, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD OWNER AND STRUCTURAL ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF OWNER OR ENGINEER.

B. CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO: BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, TEMPORARY STRUCTURES, AND PARTIALLY COMPLETED WORK. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER WILL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.

C. ENGINEER SHALL NOT HAVE CONTROL OVER OR CHARGE OF AND SHALL NOT BE RESPONSIBLE IN ANY WAY FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, OR FOR SAFETY OR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH ANY CONSTRUCTION ACTIVITIES, SINCE THESE ARE SOLELY CONTRACTOR'S RESPONSIBILITY UNDER THE CONTRACT.

D. ENGINEER SHALL NOT BE RESPONSIBLE FOR CONTRACTOR'S SCHEDULE OR FAILURES TO CARRY OUT ANY CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ENGINEER SHALL NOT HAVE CONTROL OVER OR CHARGE OF ACTIONS OF CONTRACTOR, SUBCONTRACTOR, OR ANY OF THEIR AGENTS, OR EMPLOYEES, OR ANY OTHER PERSONS PERFORMING PORTIONS OF ANY CONSTRUCTION ACTIVITIES.

E. ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ADEQUACY OF THE EXISTING STRUCTURE TO SUPPORT CURRENT BUILDING CODE DESIGN GRAVITY OR LATERAL LOADS SINCE NO VERTICAL GRAVITY OR LATERAL LOAD EVALUATION PER FOR THE CURRENT BUILDING CODE WAS PERFORMED AS PART OF THIS REPAIR PROJECT.

F. PRIOR TO COMMENCING WITH REMOVAL OF EXISTING ELEMENTS, CONTRACTOR SHALL:

1. TEMPORARILY RELOCATE AND/OR REMOVE AND REINSTALL ARCHITECTURAL/MEP COMPONENTS AS REQUIRED FOR STRUCTURAL AND INTERIOR REPAIRS. SUBMIT PLAN AND/OR LIST OF ITEMS WITH LOCATIONS OF ITEMS TO BE TEMPORARILY RELOCATED AND/OR REMOVED AND REINSTALLED TO OWNER S REPRESENTATIVE FOR REVIEW AND COORDINATION PRIOR TO PERFORMING WORK. REINSTALL COMPONENTS AS SHOWN ON DRAWINGS AND/OR IN ACCORDANCE WITH CURRENT BUILDING CODE REQUIREMENTS OF THE CITY OF ST. LOUIS, MISSOURI.

2. DEMOLISH AND REMOVE EXISTING ARCHITECTURAL/MEP COMPONENTS SHOWN TO BE REMOVED ON DRAWINGS AND/OR DETERMINED TO BE ABANDONED IN PLACE. SUBMIT PLAN AND/OR LIST OF ITEMS WITH LOCATIONS OF ABANDONED COMPONENTS AND COMPONENTS TO BE DEMOLISHED TO APPROPRIATE OWNER S REPRESENTATIVE FOR REVIEW AND COORDINATION PRIOR TO PERFORMING WORK.

1.2 JOB CONDITIONS

A. THESE DRAWINGS HAVE BEEN PREPARED BASED SOLELY ON INFORMATION GATHERED IN THE FIELD AND FROM AVAILABLE EXISTING ORIGINAL CONSTRUCTION DRAWINGS. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND INFORMATION SHOWN ON DRAWINGS BEFORE AND DURING THE COURSE OF WORK ON THIS PROJECT.

B. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR THE EXECUTION OF THE WORK.

C. THE JOBSITE IS AN OPERATING FACILITY AND AS SUCH, EVERY EFFORT SHALL BE TAKEN TO ENSURE MINIMAL INTERRUPTION TO NORMAL OPERATIONS.

D. NO WORK THAT WILL PRODUCE EXCESSIVE NOISE, DUST, DEBRIS AND/OR FUMES SHALL BE PERFORMED WITHOUT OWNER PRIOR APPROVAL. IF PERMITTED BY OWNER OR MANAGER, ALL WORK THAT WILL PRODUCE EXCESSIVE NOISE, DUST, DEBRIS AND/OR FUMES SHALL BE COORDINATED AT TIMES ACCEPTABLE WITH OWNER. ALL DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE DAILY UNLESS SPECIFICALLY APPROVED IN ADVANCE BY OWNER.

E. COORDINATE WORK THAT WILL REQUIRE TEMPORARY CLOSURE OF SIDEWALKS, PARKING SPACES OR DRIVE LANES WITH THE OWNER.

F. CONTRACTOR SHALL COORDINATE AND SUBMIT TO OWNER IN WRITING ALL CONNECTIONS TO, AND USE OF, EXISTING UTILITIES FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

G. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING NECESSARY UTILITIES NOT PROVIDED BY OWNER. OBSTRUCTIONS, EXTENSION CORDS AND HOSES ARE NOT PERMITTED IN AREAS TRAVELED BY EMPLOYEES OR THE PUBLIC EXCEPT DURING HOURS SPECIFIED BY OWNER.

1.3 SUBMITTALS

A. CONTRACTOR SHALL REVIEW SUBMITTALS PREPARED BY SUBCONTRACTORS PRIOR TO SUBMITTING TO ENGINEER.

B. PRODUCT DATA: FOR EACH TYPE OF MANUFACTURED MATERIAL AND PRODUCT INDICATED IN CONSTRUCTION DOCUMENTS.

C. MATERIAL TEST REPORTS: FROM A QUALIFIED TESTING AGENCY INDICATING AND INTERPRETING TEST RESULTS FOR COMPLIANCE WITH REQUIREMENTS INDICATED, BASED ON COMPREHENSIVE TESTING OF CURRENT MATERIALS.

D. WARRANTIES: SUBMIT MANUFACTURER'S AND INSTALLER'S SAMPLE WARRANTIES FOR EACH TYPE OF MANUFACTURED MATERIAL AND PRODUCT INDICATED IN CONSTRUCTION DOCUMENTS.

E. ALL SUBMITTALS REVIEWED BY ENGINEER ARE REVIEWED FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION INCLUDED IN THE CONTRACT DOCUMENTS. ANY ACTION INDICATED IS SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR CORRELATING AND CONFIRMING DIMENSIONS AT THE JOB SITE, TECHNIQUES OF CONSTRUCTION AND COORDINATION OF THE WORK WITH THAT OF OTHER TRADES.

F. SUBMITTALS WILL BE REVIEWED WITHIN TEN (5) WORKING DAYS AFTER BEING RECEIVED BY ENGINEER.

1.4 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: AN EXPERIENCED INSTALLER WHO HAS COMPLETED WORK SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT AND WHOSE WORK HAS RESULTED IN CONSTRUCTION WITH A RECORD OF SUCCESSFUL IN-SERVICE PERFORMANCE.

B. REFERENCE TO STANDARD SPECIFICATIONS OR CODES OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION OR TO CODES OF LOCAL OR STATE AUTHORITIES, SHALL MEET THE STANDARDS IN EFFECT AS OF DATE OF THE CONTRACT DOCUMENTS, UNLESS OTHERWISE NOTED.

C. THESE CONTRACT DOCUMENTS SHALL GOVERN IN THE EVENT OF A CONFLICT WITH STANDARD SPECIFICATIONS OR CODES OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION.

D. NO PROVISION OF ANY REFERENCED STANDARD SPECIFICATION OR CODE, WHETHER OR NOT SPECIFICALLY INCORPORATED BY REFERENCE IN THE CONTRACT DOCUMENTS, SHALL BE EFFECTIVE TO CHANGE THE DUTIES AND RESPONSIBILITIES OF OWNER, ENGINEER, CONTRACTOR, OR ANY OF THEIR CONSULTANTS, AGENTS, OR EMPLOYEES FROM THOSE SET FORTH IN THE CONTRACT DOCUMENTS, NOR SHALL IT BE EFFECTIVE TO ASSIGN TO ENGINEER OR ANY OF ENGINEER'S CONSULTANTS, AGENTS, OR EMPLOYEES ANY DUTY OR AUTHORITY TO SUPERVISE OR DIRECT THE FURNISHING OR PERFORMANCE OF THE WORK OR ANY DUTY OR AUTHORITY TO UNDERTAKE RESPONSIBILITIES CONTRARY TO THE PROVISIONS OF THE CONTRACT DOCUMENTS.

E. ALL OMISSIONS AND CONFLICTS WITHIN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER IN WRITING PRIOR TO PROCEEDING WITH THE WORK. DO NOT PROCEED WITH PERFORMING THE WORK UNTIL A WRITTEN RESPONSE IS RECEIVED FROM ENGINEER.

F. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS AT THE JOB SITE. ANY DISCREPANCIES BETWEEN THE CONDITIONS FOUND AND THOSE INDICATED IN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER IN WRITING PRIOR TO PROCEEDING WITH THE WORK.

G. DETAILS LABELED "TYPICAL" ON CONTRACT DOCUMENTS APPLY TO ALL SITUATIONS OCCURRING ON PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE LOCATIONS SPECIFICALLY INDICATED. WHERE A DETAIL IS NOT INDICATED, THE DETAIL SHALL BE THE SAME AS FOR OTHER SIMILAR CONDITIONS.

H. CONTRACTOR DESIGNED ELEMENTS SHALL BE PREPARED BY LICENSED PROFESSIONAL ENGINEERS REGISTERED IN THE STATE OF MISSOURI. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, DESIGN LOAD DATA, SUPPORT REACTIONS, AND CERTIFICATION THAT ELEMENTS WERE DESIGNED FOR LOADS SPECIFIED IN THE CONTRACT DOCUMENTS OR IN THE BUILDING CODE. THE LICENSED PROFESSIONAL ENGINEER SHALL SIGN AND SEAL ALL DOCUMENTS NOTED. IF CRITERIA INDICATED ARE NOT SUFFICIENT, SUBMIT A WRITTEN REQUEST FOR ADDITIONAL INFORMATION TO ENGINEER. THE FOLLOWING ELEMENTS AND THEIR CONNECTIONS SHALL BE CONTRACTOR DESIGNED AND INSTALLED:

1. TEMPORARY DUST, DEBRIS AND NOISE PROTECTION

   a. CONTRACTOR SHALL INSTALL AND MAINTAIN ALL VERTICAL PARTITIONS AND HORIZONTAL MEMBRANE BARRIERS REQUIRED TO PREVENT MATERIALS AND EXTERIOR ATMOSPHERIC CONDITIONS DURING DEMOLITION AND CONSTRUCTION ACTIVITIES FROM ENTERING, NEGATIVELY IMPACTING AND/OR DAMAGING OWNER-OCCUPIED SPACES OR EQUIPMENT,

   b. CONTRACTOR SHALL PROVIDE ALL BARRIERS AND FILTERED VENTILATION EQUIPMENT REQUIRED TO COMPLY WITH OSHA RESPIRABLE CRYSTALLINE SILICA REGULATIONS AT BOTH THE STRUCTURE INTERIOR AND EXTERIOR.

I. SEE DIVISION 1 SPECIFICATIONS FOR ADDITIONAL GENERAL REQUIREMENTS.

DIVISION 2 EXISTING CONDITIONS

2.1 DEMOLITION

A. PERFORM SELECTIVE STRUCTURAL DEMOLITION IN ACCORDANCE WITH SECTION 024119 SELECTIVE STRUCTURE DEMOLITION.

DIVISION 3 - CONCRETE

3.1 SUMMARY

A. THIS SECTION INCLUDES CONCRETE REPAIR, INCLUDING FORMWORK, REINFORCEMENT, REPAIR MATERIALS, PREPARATION, PLACEMENT PROCEDURES, FINISHES, AND CURING.

3.2 GENERAL

A. PERFORM CONCRETE REPAIR AND RELATED CONCRETE WORK IN ACCORDANCE WITH THE FOLLOWING DIVISION 3 SPECIFICATION SECTIONS:

1. SECTION 030130 CONCRETE REHABILITATION
2. SECTION 031000 CONCRETE FORMING AND ACCESSORIES
3. SECTION 032000 CONCRETE REINFORCEMENT
4. SECTION 033000 CAST-IN-PLACE CONCRETE
5. SECTION 035416 HYDRAULIC CEMENT UNDERLAYMENT

DIVISION 7 THERMAL AND MOISTURE PROTECTION

7.1 GENERAL

A. FURNISH ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT TO PERFORM INSTALLATION OF JOINTS AND SEALANTS AS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION AND REFERENCED SPECIFICATIONS.

B. PROVIDE AND INSTALL SEALANTS AS SPECIFIED IN THE FOLLOWING SPECIFICATION SECTIONS:

1. 079200 - SEALANTS

DIVISION 9 FINISHES

9.1 SUMMARY

A. THIS SECTION INCLUDES INSTALLATION OF NEW METAL STUD PARTITIONS, ACOUSTICAL TILE CEILINGS, AND PAINTING.

9.2 GENERAL

A. PERFORM FINISH WORK IN ACCORDANCE WITH THE FOLLOWING DIVISION 9 SPECIFICATION SECTIONS:

1. SECTION 092216 NON-STRUCTURAL METAL FRAMING
2. SECTION 092900 GYPSUM BOARD
3. SECTION 095113 ACOUSTICAL PANEL CEILINGS
4. SECTION 099100 - PAINTING

DIVISION 31 EARTHWORK

31.1 SUMMARY

A. THIS SECTION INCLUDES INSTALLATION OF CONTROLLED LOW-STRENGTH MATERIAL IN THE EXISTING ABANDONED UNDERFLOOR RETURN AIR DUCTS.

31.2 GENERAL

A. PERFORM INFILL WORK IN ACCORDANCE WITH THE INFORMATION ON THE DRAWINGS AND THE FOLLOWING DIVISION 31 SPECIFICATION SECTIONS

1. SECTION 312323.33 CONTROLLED LOW-STRENGTH MATERIAL

END OF GENERAL NOTES

LIST OF ABBREVIATIONS

AB	ANCHOR BOLT	MAS	MASONRY
ADDL	ADDITIONAL	MAX	MAXIMUM
ADH	ADHESIVE	MC	MOMENT CONNECTION
AFF	ABOVE FINISH FLOOR	MECH	MECHANICAL
ALT	ALTERNATE	MEZZ	MEZZANINE
ANCH	ANCHOR, ANCHORAGE	MFR	MANUFACTURER
APPROX	APPROXIMATE	MID	MIDDLE
ARCH	ARCHITECT	MIN	MINIMUM
		MISC	MISCELLANEOUS
B	BOTTOM		
B/	BOTTOM OF	(N)	NEW
BAL	BALANCE	NF	NEAR FACE
BL	BRICK LEDGE	NIC	NOT IN CONTRACT
BLDG	BUILDING	NS	NEAR SIDE
BLKG	BLOCKING	NTS	NOT TO SCALE
BM	BEAM		
BMD	BOTTOM OF METAL DECK	OO	OUT TO OUT
BOT	BOTTOM	OC	ON CENTER
BP	BOTTOM OF PIER	OD	OUTSIDE DIAMETER
BRG	BEARING	OPNG	OPENING
BT	BENT	OPP	OPPOSITE
BTWN	BETWEEN	OPP HAND, OH	OPPOSITE HAND
CJ	CONSTRUCTION OR CONTROL JOINT	P NAIL	PNEUMATIC NAIL
CL	CENTER-LINE	P/C	PRECAST
CLR	CLEAR	PC	PIER CAP, PILE CAP
CMU	CONCRETE MASONRY UNIT	PERP	PERPENDICULAR
COL	COLUMN, COLUMNS	PL	PLATE
CONC	CONCRETE	PLYWD	PLYWOOD
CONN	CONNECT, CONNECTION	PREFAB	PREFABRICATED
CONST	CONSTRUCTION	PSF	POUND PER SQUARE FOOT
CONT	CONTINUE, CONTINUOUS	PSI	POUND PER SQUARE INCH
CONTR	CONTRACTOR		
COR	CHANGE ORDER REQUEST		
CTR	CENTER	RAD	RADIUS
		REF	REFER, REFERENCE
DBA	DEFORMED BAR ANCHOR	REINF	REINFORCING OR REINFORCEMENT
DEG	DEGREE	REQD	REQUIRED
DIA	DIAMETER	RTU	ROOF TOP UNIT
DIAG	DIAGONAL		
DL	DEAD LOAD	SOG	SLAB-ON-GRADE
DN	DOWN	SS	STAINLESS STEEL
DWG	DRAWING	SCHED	SCHEDULE
DWL	DOWEL	SFOR	STRUCTURAL FIELD OBSERVATION REPORT
		SECT	SECTION
EA	EACH	SHT	SHEET
EF	EACH FACE	SHTMTL	SHEET METAL
EJ	EXPANSION JOINT	SIM	SIMILAR
EL	ELEVATION	SP	SPACE
EMBED, EMB	EMBEDMENT	SPEC	SPECIFICATIONS
ENG	ENGINEER	SQ	SQUARE
EQ	EQUAL	STD	STANDARD
EW	EACH WAY	STIFF	STIFFENER
(E)	EXISTING	STL	STEEL
EXP	EXPANSION	STRUC	STRUCTURAL
EXT	EXTERIOR	SW	SHEAR WALL
		SYM	SYMMETRICAL
FDN	FOUNDATION		
FF	FAR FACE	T	TOP
FIN	FINISH, FINISHED	T/	TOP OF
FLG	FLANGE	T/PC	TOP OF PIER CAP
FLR	FLOOR	T&B	TOP & BOTTOM
FRP	FIBER-REINFORCED POLYMER	TBR	TO BE REMOVED
FS	FAR SIDE	TC	TOP OF CONCRETE
FTG	FOOTING	TERM	TERMINATION
		TF	TOP OF FOOTING
GA	GAUGE	THRD	THREAD, THREADED
GALV	GALVANIZED	THK	THICK, THICKNESS
GB	GRADE BEAM	TM	TOP OF MASONRY
GLB	GLUE-LAMINATED BEAM	TOS	TOP OF SLAB
GR	GRADE	TS	TOP OF STEEL
		TW	TOP OF WALL
HD	HEADED	TYP	TYPICAL
HK	HOOK		
HORIZ, HOR	HORIZONTAL	UNO	UNLESS NOTED OTHERWISE
HT	HEIGHT		
		VIF	VERIFY IN FIELD
ID	INSIDE DIAMETER	VB	VERTICAL BRACE
INFO	INFORMATION	VT OR VERT	VERTICAL, VERTICALLY
INT	INTERIOR		
		w/	WITH
JST	JOIST	WAS	WELDED ACHOR STUD
JT	JOINT	WD	WOOD
		WF	WIDE FLANGE
KB	KNEE BRACE	WWF	WELDED WIRE FABRIC
		WP	WORK POINT
LG	LONG		
LLH	LONG LEG HORIZONTAL		
LLV	LONG LEG VERTICAL		
LP	LOW POINT		
LW	LIGHTWEIGHT		

DRAWING LIST

G1.0 GENERAL NOTES & DRAWING LIST
D2.0 FIRST FLOOR DEMOLITION PLAN
S2.0 FOUNDATION / FIRST FLOOR PLAN
S2.1 ROOF FRAMING PLAN
S3.0 WALL ELEVATIONS
S3.1 SECTIONS
S3.2 CONCRETE REPAIR DETAILS
A2.0 FIRST FLOOR PLAN
A3.0 WALL ELEVATION & DETAILS

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SEAL:

STATE OF MISSOURI
JAMES R. SNOW
NUMBER PE-2010038808
PROFESSIONAL ENGINEER
5/12/26

JAMES R. SNOW
Registered Professional Engineer
MO # PE- 2010038808
Expires 12-31-2026

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P.E. SHS
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SCALE: AS NOTED
DATE: 05-12-26
JOB NO. 5632449
SHEET TITLE:

GENERAL NOTES & DRAWING LIST

SHEET NO.

G1.0

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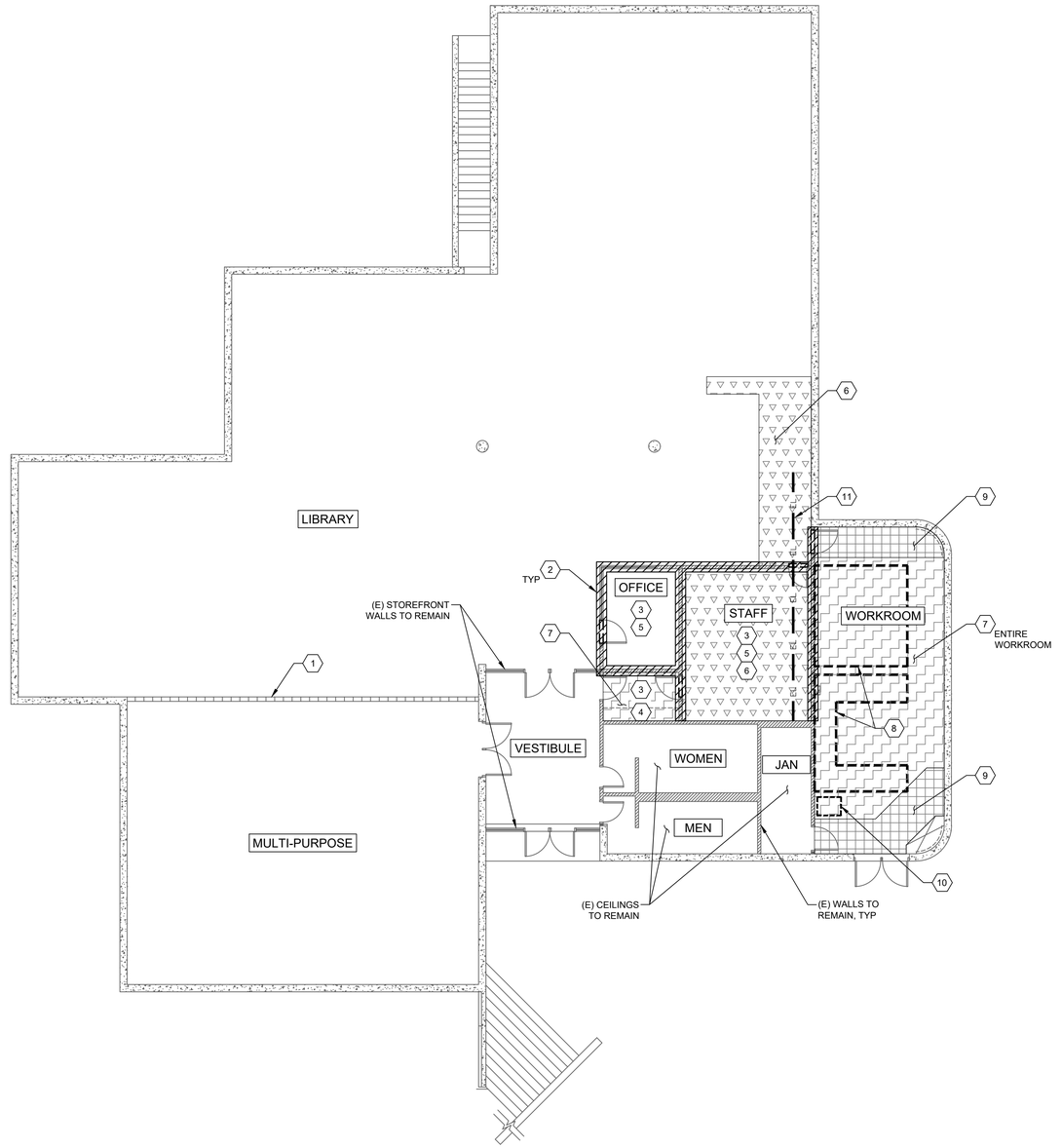

FIRST FLOOR DEMOLITION PLAN
SCALE: 1/8"=1'-0"

N

KEYED NOTES:

DEMO PLAN D2.0 KEYED NOTES:

1. DEMO AND DISPOSE OF EXISTING ACCORDION PARTITION AND ANY ASSOCIATED HARDWARE AND TRIMWORK.
2. DEMO AND DISPOSE OF EXISTING DRYWALL PARTITION. RETAIN EXISTING DOORS AND DOOR FRAMES, WINDOWS, AND WINDOW FRAMES, AND ALL WALL-MOUNTED SHELVING AND FIXTURES FOR RE-INSTALLATION.
3. DEMO AND DISPOSE OF EXISTING GYPSUM CEILING AND ASSOCIATED FURRING/SUPPORTS. DEMO AND DISPOSE OF ANY EXISTING SURFACE-MOUNTED LIGHT FIXTURES AND MECHANICAL REGISTERS.
4. OWNER WILL DEMO AND DISPOSE OF EXISTING CABINETRY AND COUNTERTOP.
5. OWNER WILL REMOVE AND RETAIN EXISTING CONTENTS AND WALL-MOUNTED FIXTURES/FURNISHINGS.
6. REMOVE AND RETAIN EXISTING CARPET SQUARES FOR REUSE IN PUBLIC SPACES.
7. OWNER WILL DEMO EXISTING VINYL TILE FLOORING. THE FLOOR TILES AND MASTIC HAVE TESTED POSITIVE FOR ASBESTOS. A LICENSED ASBESTOS ABATEMENT CONTRACTOR WILL FULLY ABATE THE ASBESTOS-CONTAINING MATERIALS FOLLOWING ALL NECESSARY PRECAUTIONS.
8. OWNER WILL DEMO AND DISPOSE OF EXISTING WORKBENCHES AND HIGH-DENSITY SHELVING UNITS AND FLOOR-MOUNTED RAILS. OWNER WILL REMOVE AND RETAIN CONTENTS. REMOVE ANY CONCRETE STUBS UNDER FLOOR RAILS, AS REQUIRED.
9. DEMO EXISTING CONCRETE SLAB-ON-GRADE SECTIONS. REFER TO STRUCTURAL PLANS.
10. OWNER WILL REMOVE AND RETAIN EXISTING I.T. RACK FOR REINSTALLATION BY OWNER.
11. TEMPORARILY RELOCATE UNDER-FLOOR ELECTRICAL CONDUIT STRIP WIRING.

LEGEND

- SEE KEYED NOTE 2
- SEE KEYED NOTE 6
- SEE KEYED NOTE 7
- SEE KEYED NOTE 9

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SEAL:

STATE OF MISSOURI
JAMES R. SNOW
NUMBER PE-2010038808
PROFESSIONAL ENGINEER
05/12/26

JAMES R. SNOW
Registered Professional Engineer
MO # PE- 2010038808
Expires 12-31-2026

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SHEET TITLE:

FIRST FLOOR DEMOLITION PLAN

SHEET NO.

D2.0

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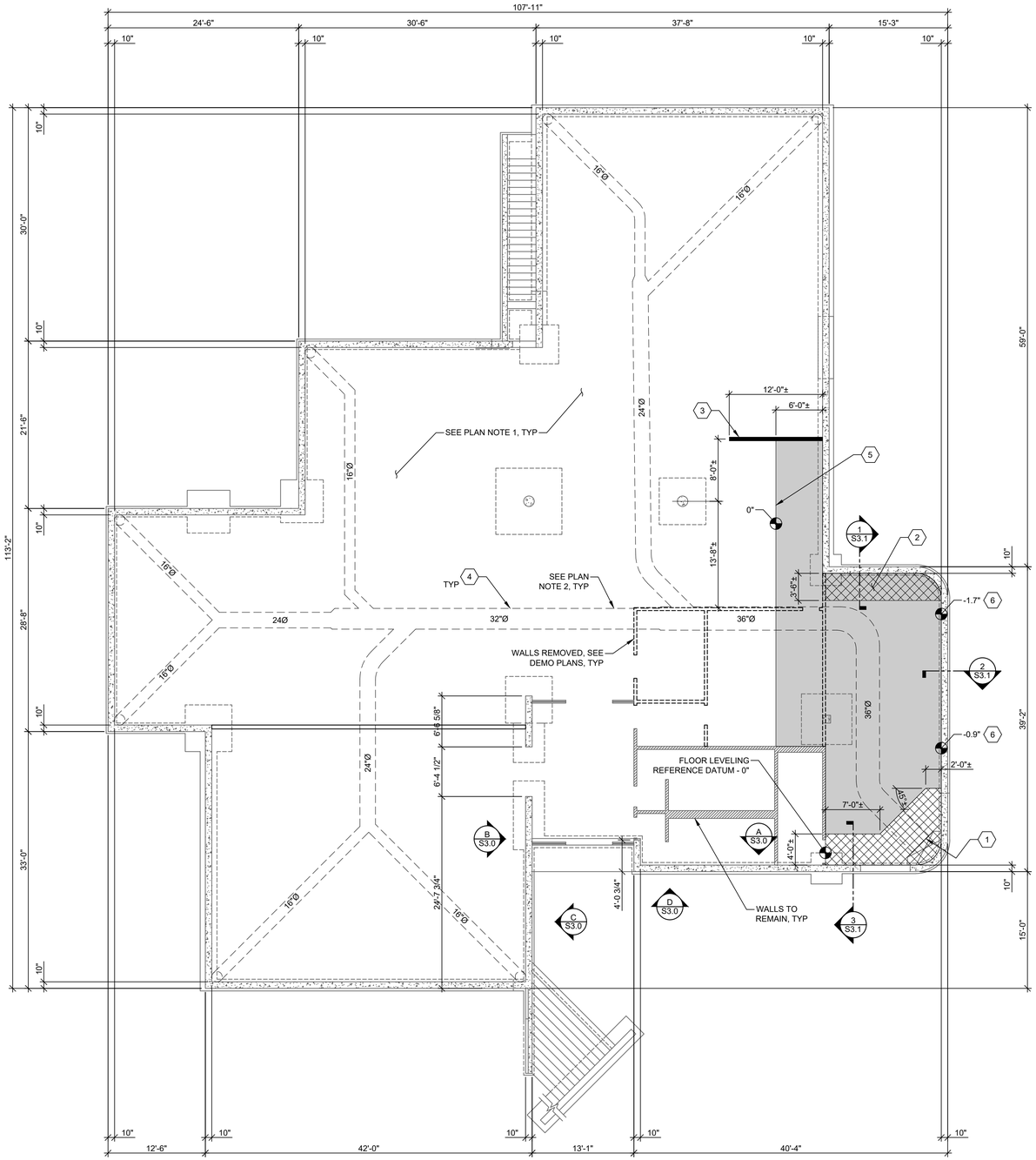

PLAN NOTES:

1. EXISTING FLOOR SLAB-ON-GRADE CONSISTS OF 4" SLAB w/ WWF 6x6 MESH.
2. EXISTING UNDERGROUND RETURN AIR DUCTS ARE METAL DUCTS ENCASED IN 4" CONCRETE WITH MINOR SLOPING DOWN TO THE NORTHEAST CORNER. LOCATIONS & SIZES SHOWN ARE BASED ON ORIGINAL CONSTRUCTION DRAWINGS. CONTRACTOR MUST VERIFY SIZE & LOCATIONS.

FOUNDATION / FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"

N

KEYED NOTES:

FOUNDATION/FIRST FLOOR PLAN S2.0 KEYED NOTES:

1. FINISH SLAB-ON-GRADE TO MATCH ELEVATION OF EXISTING SLAB-ON-GRADE AT DOOR INTO JANITOR'S CLOSET. MAINTAIN UNIFORM ELEVATION ACROSS FULL SLAB REPLACEMENT AREA.
2. FINISH SLAB-ON-GRADE TO MATCH ELEVATION AND SLOPE OF EXISTING ADJACENT SLAB-ON-GRADE.
3. GRIND DOWN HIGH SPOT ALONG SLAB-ON-GRADE JOINT TO MATCH ELEVATION OF ADJACENT SLAB-ON-GRADE WEST OF HIGH SPOT.
4. INFILL EXISTING UNDERSLAB RETURN AIR DUCTS WITH CONTROLLED LOW-STRENGTH MATERIALS (CLSM) (I.E. FLOWABLE FILL). SUBMIT FILL MATERIALS AND WRITTEN FILLING PROCEDURES FOR REVIEW AND APPROVAL.
5. CONTRACTOR TO DETERMINE EXACT LOCATION WHERE THE ELEVATION OF SELF-LEVELING HYDRAULIC CEMENT UNDERLAYMENT FILL FLOOR ELEVATION WILL BE EQUAL TO THE 0" REFERENCE DATUM.
6. CONTRACTOR TO VERIFY SELF-LEVELING HYDRAULIC CEMENT UNDERLAYMENT FILL DEPTHS SHOWN. DIMENSIONS PROVIDED ARE BASED ON ROUGH IN-SITU MEASUREMENTS.

LEGEND

- REMOVE & REPLACE SLAB-ON-GRADE. SEE DETAILS 1 & 3/S3.1
- SELF-LEVELING HYDRAULIC CEMENT UNDERLAYMENT FILL TO LEVEL FLOOR AREA. SEE DETAIL 2/S3.1

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SHEET TITLE:

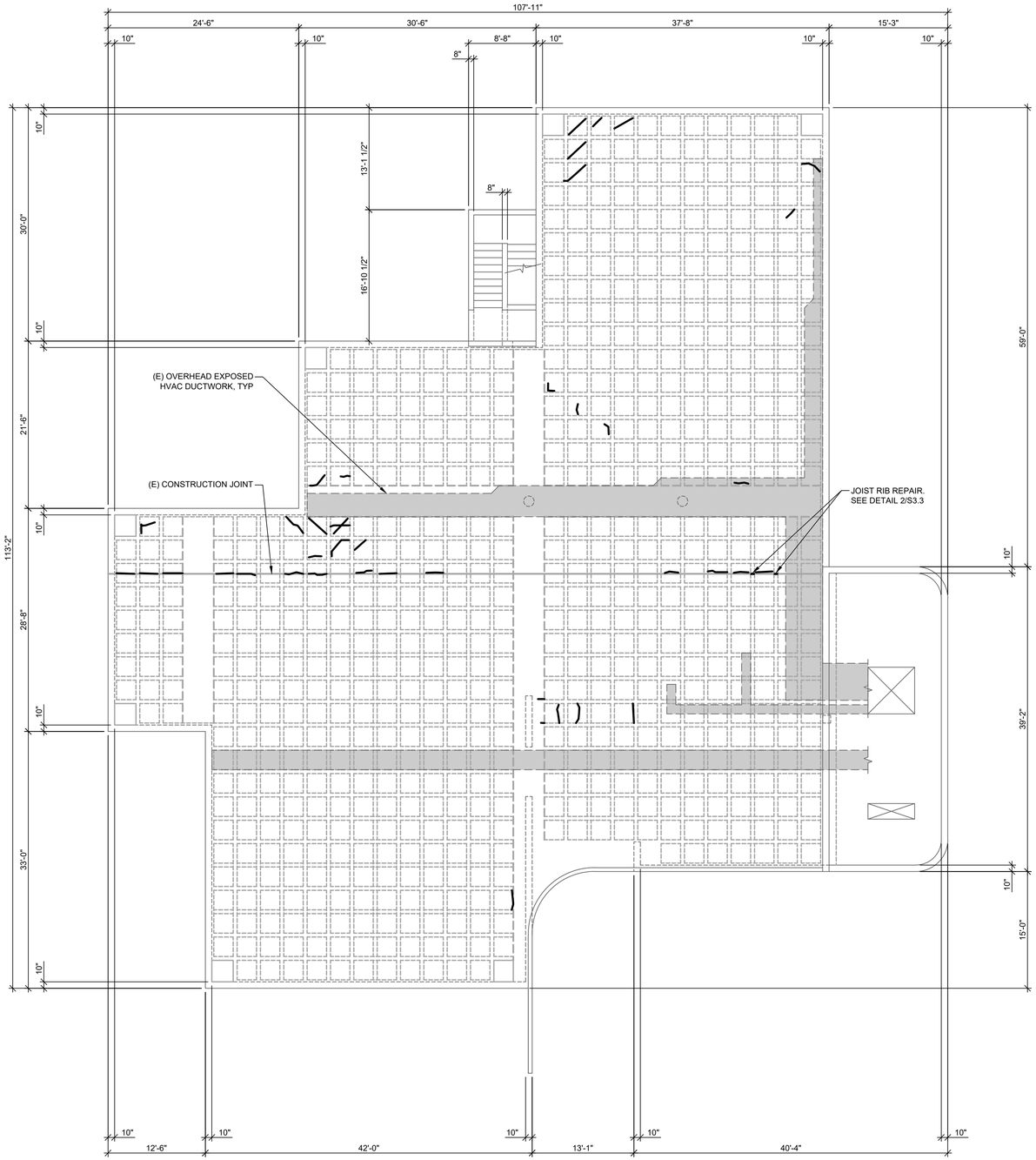
FOUNDATION / FIRST FLOOR PLAN

SHEET NO.

S2.0

LEGEND:

——— - INDICATES UNDERSIDE CRACK LOCATIONS, SEE PLAN NOTE 5



PLAN NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK AND REPORT ANY SIGNIFICANT DISCREPANCIES IN WRITING TO THE ENGINEER.
2. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL EXTENT AND LOCATIONS OF CONCRETE REPAIR AREAS IN ACCORDANCE WITH THE CONCRETE REPAIR DETAILS AND SPECIFICATIONS. FOR BIDDING, ASSUME 20 ft² OF 3" DEEP PARTIAL DEPTH CONCRETE REPAIRS TOTAL.
3. COORDINATE ANY EQUIPMENT RELOCATION OR SHUT-DOWNS, PROTECTION MEASURES, DUST AND WATERPROOFING MEASURES, ETC WITH OWNER PRIOR TO STARTING WORK.
4. EXISTING ROOF FRAMING CONSISTS OF 4" SLAB ON 6" WIDE x 20" DEEP WAFFLE SLAB JOISTS SPACED AT 3'-0" OC.
5. CLEAN CONCRETE SURFACES AROUND SLAB AND JOIST CRACKING AND PERFORM SOUNDING TO IDENTIFY DELAMINATIONS. IF DELAMINATIONS ARE PRESENT, PERFORM PARTIAL DEPTH CONCRETE SURFACE REPAIRS PER DETAILS ON SHEET S3.2, OTHERWISE JUST CLEAN AND PAINT SURFACES AROUND CRACKS. REPAINT ALL CLEANED AND REPAIRED CONCRETE SURFACES TO MATCH SURROUNDING AREAS.

ROOF PLAN

SCALE: 1/8"=1'-0"

N

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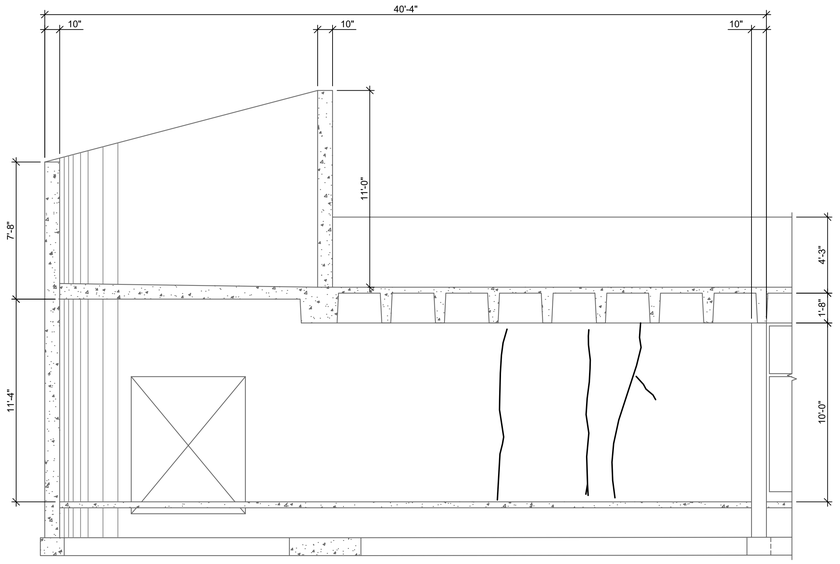
SHEET TITLE:

ROOF FRAMING PLAN

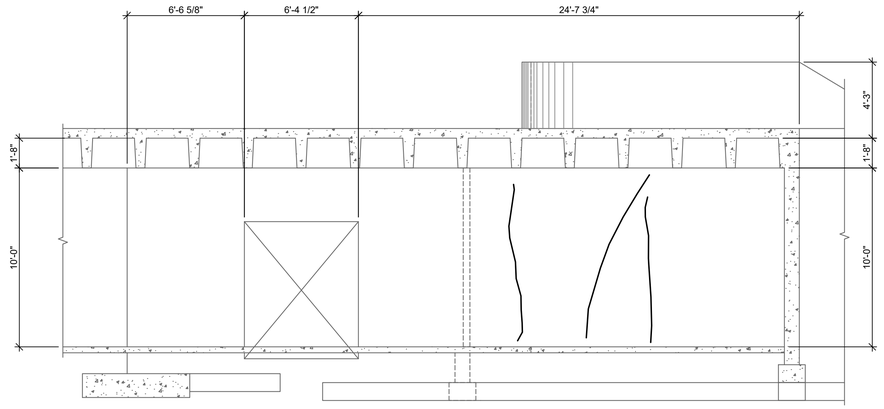
SHEET NO.

S2.1



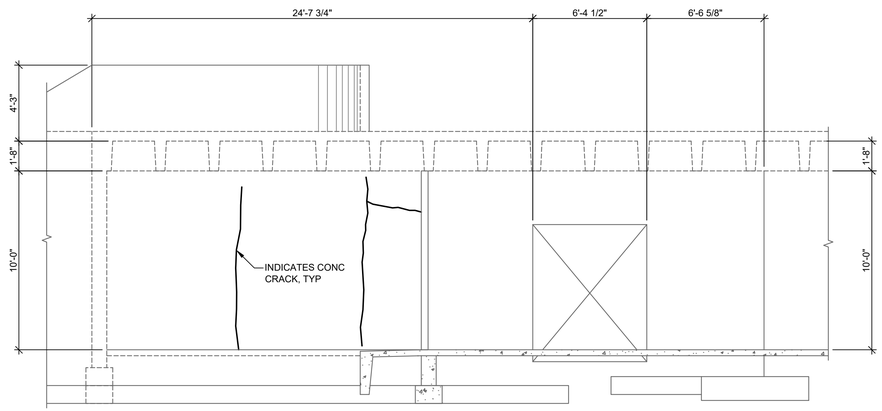
NOTE: VERIFY POTENTIAL FULL-DEPTH CRACKING. COORDINATE w/ ELEVATION D/S3.0

A S3.0 ELEVATION
SCALE: 1/4"=1'-0"



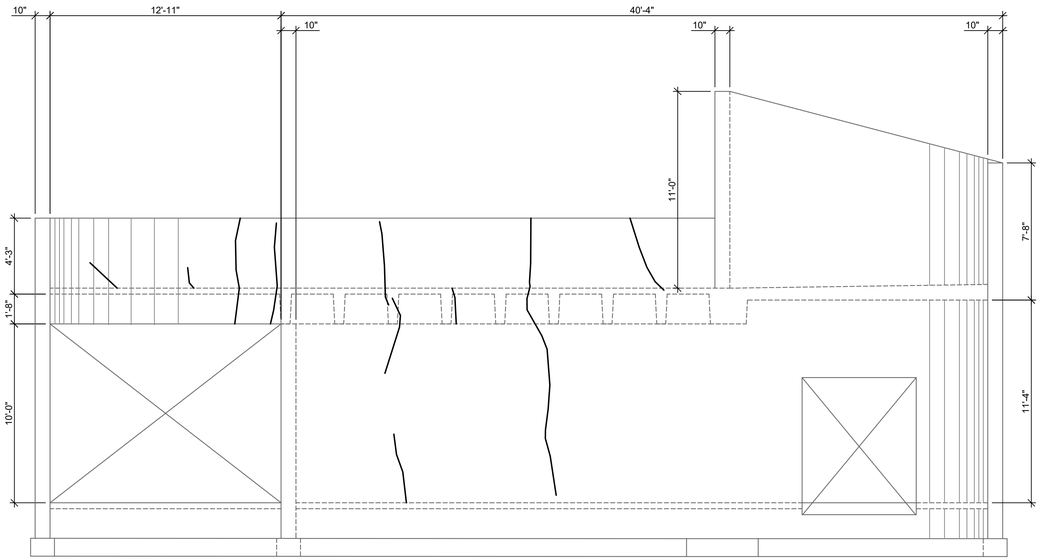
NOTE: VERIFY POTENTIAL FULL-DEPTH CRACKING. COORDINATE w/ ELEVATION C/S3.0

B S3.0 ELEVATION
SCALE: 1/4"=1'-0"



NOTE: VERIFY POTENTIAL FULL-DEPTH CRACKING. COORDINATE w/ ELEVATION B/S3.0

C S3.0 ELEVATION
SCALE: 1/4"=1'-0"



NOTE: VERIFY POTENTIAL FULL-DEPTH CRACKING. COORDINATE w/ ELEVATION A/S3.0

D S3.0 ELEVATION
SCALE: 1/4"=1'-0"

ELEVATION NOTES:

1. PERFORM CONCRETE SURFACE REPAIRS PER DETAILS ON SHEET S3.2. FOR CRACKS GREATER THAN 0.010", PERFORM EPOXY CRACK INJECTION.
2. FOR BIDDING PURPOSES, ASSUME 100 LF OF CRACK TO BE EPOXY INJECTED

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SHEET TITLE:

WALL ELEVATIONS

SHEET NO.

S3.0

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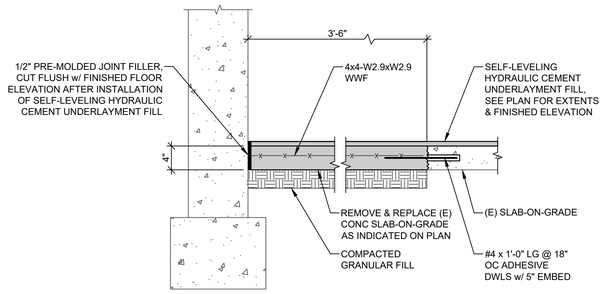

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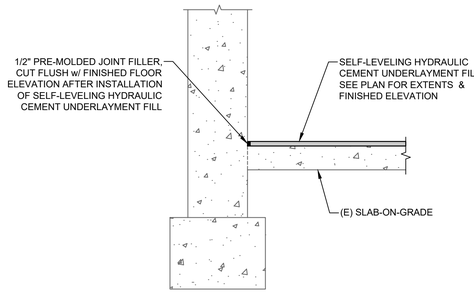

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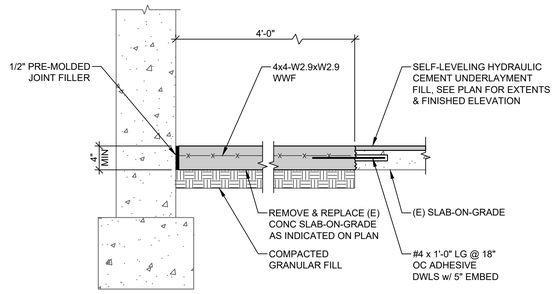

3 S3.1 SECTION
SCALE: 1"=1'-0"

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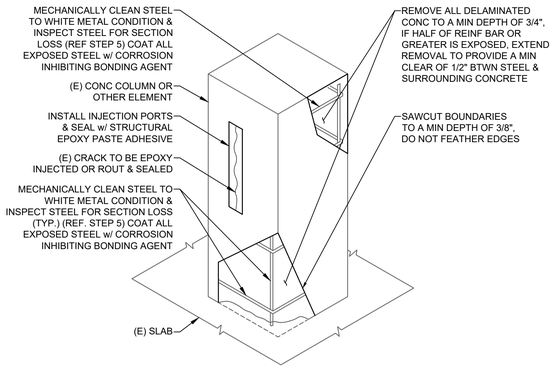
SHEET TITLE:

SECTIONS

SHEET NO.

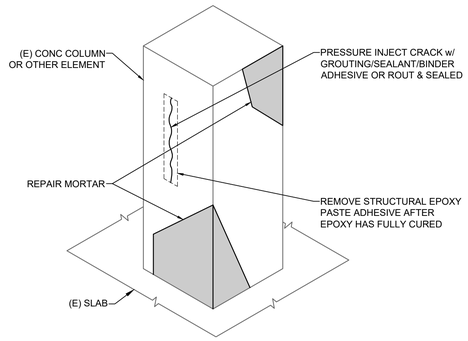
S3.1



EXISTING AND DEMOLITION CONDITION
NTS

CONCRETE SURFACE REPAIR PROCEDURE:

1. WORK SHALL INCLUDE FURNISHING ALL MATERIALS, LABOR, TOOLS, AND EQUIPMENT TO REPAIR OVERHEAD AND VERTICAL SURFACES.
2. REMOVE ALL LOOSE AND DETERIORATED CONCRETE ON SURFACE. CHIP OUT AND REPAIR AREA 1/2" MIN, BEYOND DETERIORATED CONCRETE. SAWCUT BOUNDARIES OF DETERIORATED CONCRETE TO A MINIMUM DEPTH OF 3/8". DO NOT FEATHER EDGES.
3. MINIMUM DEPTH OF REPAIR TO BE 3/4".
4. IF HALF OF THE REINFORCEMENT BAR OR GREATER IS EXPOSED, PROVIDE A MINIMUM OF 3/4" CLEARANCE BETWEEN EXPOSED REINFORCEMENT AND SURROUNDING CONCRETE.
5. MECHANICALLY CLEAN STEEL BY SANDBLASTING TO WHITE METAL CONDITION TO REMOVE ALL CORROSION. AFTER SANDBLASTING REINFORCING STEEL, MEASURE DIAMETER AT NARROWEST POINT. IF SECTION LOSS IS GREATER THAN 25% (SEE "BAR DIAMETER TABLE" ON SHEET S3.2), ADD NEW REINFORCING BAR PER DETAIL 4/S3.2.
6. CHIP CONCRETE TO OBTAIN A FRACTURED SURFACE PROFILE OF ±1/8" (CSP-6).
7. SUBSTRATE SHOULD BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER DURING APPLICATION OF SCRUB COAT AND REPAIR MORTAR.
8. APPLY TWO COATS OF CORROSION INHIBITING BONDING AGENT PER MANUFACTURERS SPECIFICATIONS TO ALL EXPOSED REINFORCEMENT ALLOWING TO DRY FOR 2-3 HOURS BETWEEN COATS. ALLOW SECOND COAT TO DRY PRIOR TO PLACEMENT OF REPAIR MORTAR.
9. APPLY PRIME COAT OF CORROSION INHIBITING BONDING AGENT TO SUBSTRATE PER MANUFACTURERS SPECIFICATIONS. REPAIR MORTAR SHALL BE APPLIED INTO A WET PRIME COAT.
10. WHILE CORROSION INHIBITING BONDING AGENT IS STILL WET, APPLY REPAIR MORTAR PER MANUFACTURERS SPECIFICATIONS. FOR APPLICATIONS GREATER THAN 1 1/2" IN DEPTH, APPLY PATCH MATERIAL IN LIFTS NOT EXCEEDING 1 1/2". SCORE THE TOP SURFACE OF EACH LIFT AND ALLOW EACH LIFT TO REACH FINAL SET THEN REPEAT FROM STEP 9.
11. REPAIR MORTAR TO BE CURED PER MANUFACTURERS RECOMMENDATIONS.

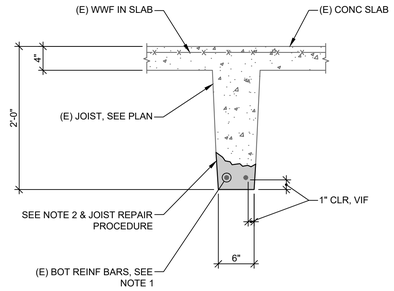


REPAIR CONDITION
NTS

CONCRETE CRACK REPAIR PROCEDURE FOR PRESSURE INJECTION:

1. SURFACE MUST BE CLEAN AND FREE OF DETERIORATED CONCRETE. REMOVE DUST, LAITANCE, GREASE, IMPREGNATIONS, PAINT AND ANY OTHER CONTAMINANTS.
2. INSTALL INJECTION PORTS AS REQUIRED BY EQUIPMENT MANUFACTURER. SPACING OF PORTS SHALL BE AS REQUIRED TO ACHIEVE THE TRAVEL OF EPOXY RESIN BETWEEN PORTS AND FILLING THE CRACKS TO A MAXIMUM. IF CRACKS EXTEND THROUGH THE MEMBER, PROVIDE INJECTION PORTS ON OPPOSITE SIDES AT STAGGERED ELEVATIONS.
3. PLACE STRUCTURAL EPOXY PASTE ADHESIVE OVER CRACKS TO BE PRESSURE INJECTED AND AROUND EACH INJECTION PORT PER MANUFACTURER SPECIFICATIONS. ALLOW SUFFICIENT TIME TO SET BEFORE PRESSURE INJECTING.
4. USING AUTOMATED INJECTION EQUIPMENT, INJECT GROUTING / SEALANT / BINDER ADHESIVE STEADY PRESSURE AND AS REQUIRED PER MANUFACTURERS SPECIFICATIONS. REMOVE ALL INJECTION PORTS AFTER INJECTION IS COMPLETED.
5. AFTER EPOXY HAS FULLY CURED, GRIND STRUCTURAL EPOXY PASTE ADHESIVE OFF CONCRETE SURFACE AS PART OF THE CONCRETE PREPARATION TO RECEIVE FINAL FINISH.

1 S3.2 CONCRETE SURFACE & CRACK PRESSURE INJECTION REPAIR DETAIL
NTS

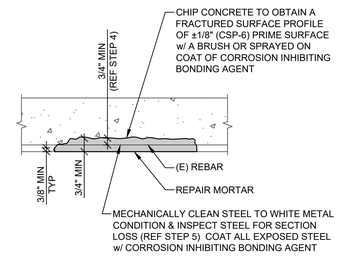


NOTES:
1. EXISTING REINFORCING CONSISTS OF (2) #6
2. CONTRACTOR SHALL REPAIR DELAMINATED CONCRETE & DETERIORATED REINFORCING STEEL AT JOIST BOTTOM , AS REQUIRED.

JOIST INSPECTION AND REPAIR PROCEDURE

1. BREAK/CHIP AND REMOVE ALL DELAMINATED CONCRETE AT BOTTOM OF (E) JOISTS, EXERCISING DUE CARE TO AVOID DAMAGING EXISTING REINFORCING STEEL
2. IF ONE OR MORE LONGITUDINAL BARS ARE PARTIALLY EXPOSED/EMBEDDED AFTER CONCRETE REMOVAL, PROCEED AS FOLLOWS FOR THOSE PARTIALLY EXPOSED/EMBEDDED BARS:
   a. IF SURFACE RUST OR RUST SCALE IS PRESENT ON EXPOSED PORTION OF STEEL BAR, REMOVE ADDITIONAL CONCRETE AROUND UNDERSIDE OF BAR AT LOCATION(S) OF RUST TO EXPOSE ENTIRE BAR DIAMETER. CONTINUE REMOVING CONCRETE AROUND CIRCUMFERENCE AND ALONG BAR LENGTH UNTIL ALL RUST IS EXPOSED. REMOVE A MINIMUM 3/4-INCH, MAXIMUM 1.5-INCHES OF CONCRETE AROUND ENTIRE BAR CIRCUMFERENCE AT LOCATIONS OF RUST TO PROVIDE ADEQUATE CLEARANCE FOR INSPECTION, REPAIR AND COATING.
   b. IF SURFACE RUST OR RUST SCALE IS NOT PRESENT ON EXPOSED PORTION OF STEEL BAR, PROTECT EXPOSED BAR FROM CONTACT WITH WATER AND CHEMICALS UNTIL CORROSION-INHIBITING BONDING AGENT IS APPLIED.
4. MECHANICALLY CLEAN ALL EXPOSED STEEL BARS BY SANDBLASTING TO WHITE METAL CONDITION TO REMOVE ALL CORROSION. AFTER SANDBLASTING EXPOSED STEEL BARS, MEASURE DIAMETER AT THE NARROWEST POINT AND PROCEED AS FOLLOWS:
   a. IF LONGITUDINAL BAR DIAMETER IS LESS THAN 0.65", REPAIR PER THE FOLLOWING:
      i. LAP SPLICE REPAIR: APPLY 2 COATS OF CORROSION-INHIBITING BONDING AGENT TO EXISTING BAR AND LAP SPLICE A NEW #6 BAR, EXTEND 40" MIN ON BOTH SIDES OF EXISTING BAR WHERE DIAMETER MEASURES LESS THAN NOTED ABOVE.
      ii. MECHANICAL COUPLER REPAIR: CUT AND REMOVE THE CORRODED SECTION OF EXISTING BAR, APPLY 2 COATS OF CORROSION-INHIBITING BONDING AGENT TO REMAINING EXISTING BAR, AND INSTALL MECHANICAL COUPLERS WITH EPOXY COATED REPLACEMENT BAR OF THE SAME BAR SIZE IN LIEU OF LAP SPLICE.
         1. APPLY 2 COATS OF CORROSION-INHIBITING BONDING AGENT TO MECHANICAL COUPLERS AFTER INSTALLATION.
         2. MECHANICAL COUPLERS SHALL BE CAPABLE OF DEVELOPING 125% OF REINFORCING BAR STRENGTH.
      iii. CORROSION-INHIBITING BONDING AGENT APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
   b. STAGGER SPLICES BETWEEN ADJACENT BARS BY A MINIMUM OF 24 INCHES MEASURED ALONG THE LENGTH OF THE BAR. STAGGER REQUIREMENT APPLIES BETWEEN BOTH NEW/NEW SPLICES AND NEW/EXISTING SPLICES. IF CORRODED AREA REQUIRING REPAIR OCCURS AT AN EXISTING LAP SPLICE, NOTIFY STRUCTURAL ENGINEER WITH WRITTEN RFI AT LEAST FIVE FULL WORKING DAYS PRIOR TO CONCRETE PLACEMENT FOR REPAIR DIRECTIONS.
5. SUBMIT SPECIAL INSPECTIONS REPORT NOTING LOCATIONS OF REINFORCING CHECKED BY SPECIAL INSPECTOR AND QUANTITY AND LOCATION OF REINFORCEMENT REQUIRING REPAIR TO STRUCTURAL ENGINEER AT LEAST FIVE FULL WORKING DAYS PRIOR TO CONCRETE PLACEMENT TO ALLOW ADEQUATE TIME FOR REVIEW.
6. PREPARE BEAM CONCRETE SUBSTRATE SURFACE TO ACHIEVE A FRACTURED SURFACE PROFILE OF +/- 1/4 INCH (CSP-9).
7. CLEAN PREPARED CONCRETE SUBSTRATE TO REMOVE ALL LOOSE DEBRIS TO ACHIEVE A LAITANCE AND CONTAMINANT-FREE SURFACE. SURFACE MUST BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER DURING APPLICATION OF CORROSION-INHIBITING BONDING AGENT.
8. APPLY TWO COATS OF CORROSION-INHIBITING BONDING AGENT PER MANUFACTURERS SPECIFICATIONS TO ALL EXPOSED REINFORCEMENT ALLOWING 2-3 HOURS OF DRYING TIME BETWEEN COATS. ALLOW SECOND COAT TO DRY PRIOR TO PLACEMENT OF REPAIR MORTAR.
9. APPLY PRIME COAT OF CORROSION-INHIBITING BONDING AGENT TO PREPARED SUBSTRATE PER MANUFACTURERS SPECIFICATIONS WITHIN APPLICATION WINDOW PRIOR TO CONCRETE PLACEMENT. REPAIR CONCRETE SHALL BE APPLIED INTO A WET PRIME COAT.

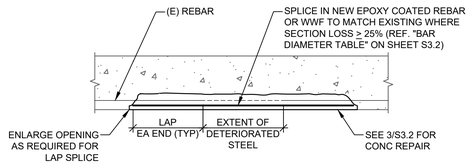
2 S3.2 CONCRETE JOIST REPAIR DETAIL
SCALE: 1"=1'-0"



REPAIR PROCEDURE:

1. WORK SHALL INCLUDE FURNISHING ALL MATERIALS, LABOR, TOOLS, AND EQUIPMENT TO REPAIR OVERHEAD AND VERTICAL SURFACES.
2. REMOVE ALL LOOSE AND DETERIORATED CONCRETE ON SURFACE. CHIP OUT AND REPAIR AREA 1/2" MIN, BEYOND DETERIORATED CONCRETE. SAWCUT BOUNDARIES OF DETERIORATED CONCRETE TO A MINIMUM DEPTH OF 3/8". DO NOT FEATHER EDGES.
3. MINIMUM DEPTH OF REPAIR TO BE 3/4".
4. IF HALF OF THE REINFORCEMENT BAR OR GREATER IS EXPOSED, PROVIDE A MINIMUM OF 3/4" CLEARANCE BETWEEN EXPOSED REINFORCEMENT AND SURROUNDING CONCRETE.
5. MECHANICALLY CLEAN STEEL BY SANDBLASTING TO WHITE METAL CONDITION TO REMOVE ALL CORROSION. AFTER SANDBLASTING REINFORCING STEEL, MEASURE DIAMETER AT NARROWEST POINT. IF SECTION LOSS IS GREATER THAN 25% (SEE "BAR DIAMETER TABLE" ON SHEET S3.2), ADD NEW REINFORCING BAR PER DETAIL 4/S3.2.
6. CHIP CONCRETE TO OBTAIN A FRACTURED SURFACE PROFILE OF ±1/8" (CSP-6).
7. SUBSTRATE SHOULD BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER DURING APPLICATION OF SCRUB COAT AND REPAIR MORTAR.
8. APPLY TWO COATS OF CORROSION INHIBITING BONDING AGENT PER MANUFACTURERS SPECIFICATIONS TO ALL EXPOSED REINFORCEMENT ALLOWING TO DRY FOR 2-3 HOURS BETWEEN COATS. ALLOW SECOND COAT TO DRY PRIOR TO PLACEMENT OF REPAIR MORTAR.
9. APPLY PRIME COAT OF CORROSION INHIBITING BONDING AGENT TO SUBSTRATE PER MANUFACTURERS SPECIFICATIONS. REPAIR MORTAR SHALL BE APPLIED INTO A WET PRIME COAT.
10. WHILE CORROSION INHIBITING BONDING AGENT IS STILL WET, APPLY REPAIR MORTAR PER MANUFACTURERS SPECIFICATIONS. FOR APPLICATIONS GREATER THAN 1 1/2" IN DEPTH, APPLY PATCH MATERIAL IN LIFTS NOT EXCEEDING 1 1/2". SCORE THE TOP SURFACE OF EACH LIFT AND ALLOW EACH LIFT TO REACH FINAL SET THEN REPEAT FROM STEP 9.
11. REPAIR MORTAR TO BE CURED PER MANUFACTURERS RECOMMENDATIONS.

3 S3.2 TYPICAL CONCRETE PARTIAL DEPTH REPAIR DETAIL
NTS



NOTE:
CONTRACTOR MAY USE MECHANICAL SPLICE CAPABLE OF DEVELOPING 125% Fy IN LIEU OF LAP SPLICE.

4 S3.2 TYPICAL CONCRETE PARTIAL DEPTH REPAIR DETAIL @ REINF SECTION LOSS > 25%
NTS

BAR OR WIRE DIAMETER TABLE

BAR OR WIRE SIZE	NOMINAL DIAMETER (IN.)	MINIMUM ALLOWABLE DIAMETER (IN.)	REQUIRED LAP LENGTH (IN.)
W3.5 WIRE	0.211	0.183	(2) SPACES
#3	0.375	0.325	15
#4	0.500	0.433	19
#5	0.625	0.541	29
#6	0.750	0.650	40
#7	0.875	0.758	48
#8	1.000	0.866	60
#9	1.128	0.977	74
#10	1.270	1.100	91

NOTE:
IF LESS THAN 12" OF CONCRETE IS BELOW BAR, REQUIRED LAP LENGTH MAY BE REDUCED BY A 1.3 FACTOR, BUT 12" MINIMUM

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SEAL:

STATE OF MISSOURI
JAMES R. SNOW
NUMBER PE-2010038808
PROFESSIONAL ENGINEER
5/12/26

JAMES R. SNOW
Registered Professional Engineer
MO # PE- 2010038808
Expires 12-31-2026

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REVISIONS:

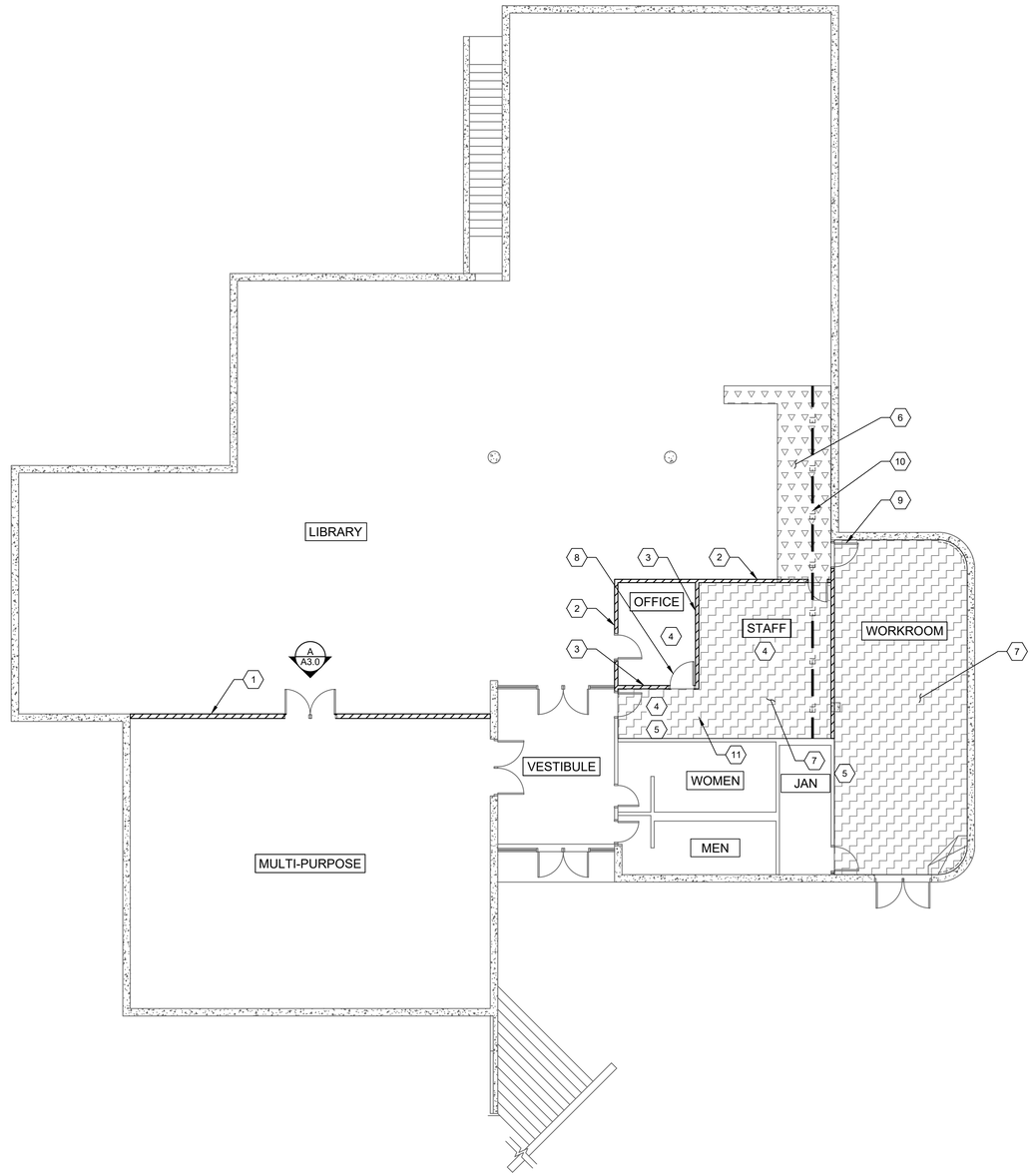
P.M. JRS
P.E. SHS
DRAWN BY: CPG CHECKED BY: JRS
SCALE: AS NOTED
DATE: 05-12-26
JOB NO. 5632449

SHEET TITLE:

CONCRETE REPAIR DETAILS

SHEET NO.

S3.2



FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"

N

KEYED NOTES:

ARCHITECTURAL FIRST FLOOR PLAN A2.0 KEYED NOTES:

1. INSTALL FULL-HEIGHT DRYWALL ON METAL STUD PARTITION WITH TOP DEFLECTION TRACK DETAIL PER DETAIL 1/A3.0 AND BASE DETAIL PER DETAIL 2/A3.0. PAINT BOTH SIDES OF WALL. COORDINATE COLOR WITH OWNER.
2. INSTALL FULL-HEIGHT DRYWALL ON METAL STUD PARTITION WITH TOP DEFLECTION TRACK DETAIL PER DETAIL 1/A3.0 AND BASE DETAIL PER DETAIL 2/A3.0. MATCH EXISTING PARTITION LAYOUT AND USE RETAINED DOORS, WINDOWS, AND FRAMES, UNLESS NOTED OTHERWISE. PAINT BOTH SIDES OF WALL. COORDINATE COLOR WITH OWNER.
3. DRYWALL AT THIS PARTITION ONLY NEEDS TO EXTEND 6" ABOVE CEILING LEVEL. METAL STUDS SHOULD EXTEND FULL-HEIGHT. SEE KEYED NOTE 2 FOR ADDITIONAL INFORMATION.
4. INSTALL 2X2 ACOUSTICAL LAY-IN TILE CEILING AT 8'-0" A.F.F. PROVIDE LAY-IN LIGHT FIXTURES AND HVAC SUPPLY AND RETURN AIR REGISTERS TO MATCH EXISTING CONDITIONS.
5. INSTALL CABINETRY, SINK, FAUCET, AND LAMINATE COUNTERTOP IN SIMILAR CONFIGURATION AS EXISTING LAYOUT. SUBMIT PLANS AND DETAILS OF NEW ELEMENTS FOR REVIEW AND APPROVAL BEFORE PURCHASE AND INSTALLATION. COORDINATE COLOR, LAYOUT, AND PLACEMENT WITH OWNER
6. REINSTALL EXISTING CARPET SQUARES.
7. INSTALL 7"x48" COMMERCIAL GRADE LUXURY VINYL TILE FLOORING IN COORDINATION WITH OWNER. SUBMIT MATERIALS FOR REVIEW AND APPROVAL BEFORE PURCHASE AND INSTALLATION. FLOORING SYSTEM SHALL BE MINIMUM 2.5MM THICK WITH A 20 MIL WEAR LAYER THICKNESS
8. RELOCATE DOOR FROM EXISTING KITCHENETTE SPACE AND INSTALL IT IN THE WALL TO MANAGER'S OFFICE.
9. INSTALL NEW 20-MINUTE FIRE-RATED METAL DOOR WITH UPPER HALF LITE AND LOWER HALF LOUVER WITH A NORMAL ENTRY PASSAGE LOCK SET AT EXISTING DOOR OPENING. COORDINATE HARDWARE AND DOOR FEATURES WITH OWNER PRIOR TO PURCHASE AND INSTALLATION.
10. REINSTALL UNDER-FLOOR ELECTRICAL CONDUIT STRIP WIRING UNDER NEW FLOORING TILES AND REPLACED CARPET SQUARES.
11. DO NOT REPLACE WALL HERE. PATCH AND PAINT EXISTING DRYWALL AT EAST END.

LEGEND

- SEE KEYED NOTE 2
- SEE KEYED NOTE 6
- SEE KEYED NOTE 7

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JOB NO.	5632449

SHEET TITLE:

FIRST FLOOR PLAN

SHEET NO.

A2.0

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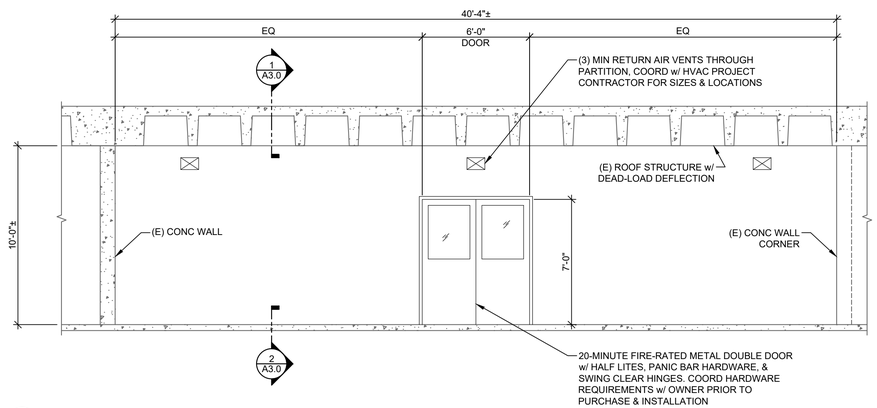
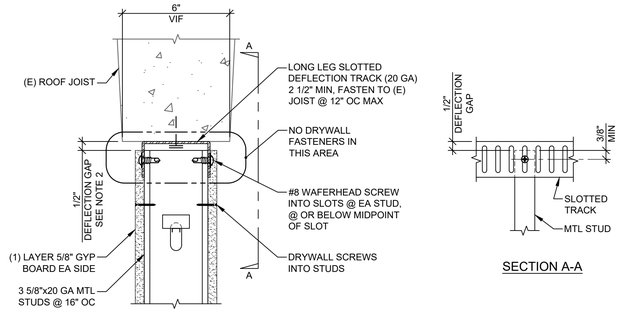


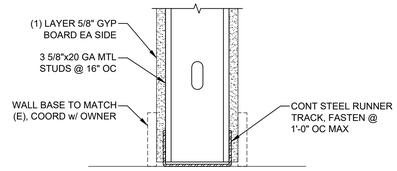
A A3.0 ELEVATION
SCALE: 1/4"=1'-0"



SECTION A-A

NOTES:
1. CONTRACTOR MAY SUBMIT ALTERNATIVE TOP ATTACHMENT DETAIL THAT ACCOMMODATES EXISTING DEAD LOAD DEFLECTION PRESENT PLUS ±1/4" MINIMUM LIVE LOAD DEFLECTION. ALTERNATIVE OPTIONS INCLUDE STUD CLIPS, LONG LEG (NON-SLOTTED) DEFLECTION TRACK, NESTED TOP TRACKS, ETC.
2. FILL DEFLECTION GAP w/ COMPRESSIBLE FOAM FILLER OR SEALANT WHERE TOP OF WALL IS VISIBLE.

1 A3.0 INTERIOR PARTITION HEAD DETAIL
SCALE: 3"=1'-0"



2 A3.0 INTERIOR PARTITION BASE DETAIL
SCALE: 3"=1'-0"

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SHEET TITLE:

WALL ELEVATIONS & DETAILS

SHEET NO.

A3.0

ATTACHMENT D

BOARD OF DIRECTORS OF THE CITY OF ST LOUIS MUNICIPAL LIBRARY DISTRICT DBA ST. LOUIS PUBLIC LIBRARY
RFP 26-009500 MACHACEK BRANCH REPAIRS

NON-COLLUSION AFFIDAVIT

The undersigned being duly sworn on oath, says that the undersigned has not, nor has any other person, member, representative, or agent of the firm, company or corporation or partnership represented by the undersigned, entered into any combination, collusion or agreement with any person relative to the price to be proposed by anyone at such letting nor to prevent any person from proposing nor to induce anyone to refrain from proposing, and that this proposal is made without reference to any other proposal and without any agreement, understanding or combination with any other person in reference to such proposal.

Further, the undersigned says that no person or persons, firm, or corporation has, have or will receive directly or indirectly, any rebate, fee, gift, commission or thing of value on account of such Proposal.

Proposer: _____

By (Written Signature): _____

Printed Name: _____

Title: _____

ATTACHMENT E

BOARD OF DIRECTORS OF THE CITY OF ST LOUIS MUNICIPAL LIBRARY DISTRICT DBA ST. LOUIS PUBLIC LIBRARY
RFP 26-009500 MACHACEK BRANCH REPAIRS

E-VERIFY AFFIDAVIT

Pursuant to Section 285.530 of the Missouri Revised Statutes, as amended, the Proposer entering into a contract with the St. Louis Public Library is required to enroll in and verify the work eligibility status of all its newly hired employees through the E-Verify program. The Proposer is not required to verify the work eligibility status of all its newly hired employees through the E-verify program if E-verify no longer exists.

The undersigned, on behalf of the Proposer, being first duly sworn, deposes and states that the Proposer does not knowingly employ an unauthorized alien. The undersigned further affirms that, prior to entering into its contract with the St. Louis Public Library, the undersigned Proposer will enroll in and agree to verify the work eligibility status of all its newly hired employees through the E-Verify program.

Proposer: _____

By (Written Signature): _____

Printed Name: _____

Title: _____

ATTACHMENT F

BOARD OF DIRECTORS OF THE CITY OF ST LOUIS MUNICIPA DISTRICT DBA ST. LOUIS PUBLIC LIBRARY

DIVERSITY STATEMENT OF THE BOARD OF DIRECTORS OF THE ST. LOUIS PUBLIC LIBRARY

WHEREAS, the St. Louis Public Library(the “Library") is a municipal library district authorized pursuant to Chapter 182 of the Missouri Revised Statutes to, among other things, purchase, hold or lease grounds, and to occupy, lease or erect appropriate buildings for the use of the Library, and to exercise all powers and rights of political subdivisions or similar corporations; and

WHEREAS, the Board of Directors (the "Board") of the Library is vested with the power to make and adopt bylaws, rules and regulations for its own guidance and for the governance of the Library as may be expedient and not inconsistent with State law, and

WHEREAS, the Library provides free public library services for the City of St. Louis (the “City”), an urban area with vast ethnic, religious, socioeconomic and cultural backgrounds; and

WHEREAS, efforts to encourage by direct contact or general solicitation persons from diverse backgrounds to contract with or become employees of the Library; to educate through seminars and workshops persons from diverse backgrounds the opportunity to contract with or become employees of the Library; to assist persons from diverse backgrounds to contract with or become employees of the Library; to adjust or modify, when appropriate, financing, bonding, or insurance requirements for persons from diverse backgrounds to contract with or become employees of the Library; and to encourage partnering by persons from diverse backgrounds to contract with the Library will serve to further the governmental and public interest of the Library by providing outreach to the residents of the City; and

WHEREAS, a practice of the Library of contracting with and employing persons reflecting the ethnic, religious, socioeconomic and cultural backgrounds of the citizens of the City will serve to further the governmental interest of the Library; and

WHEREAS, a practice of the Library of contracting with and employing persons of varied ethnic religious, socioeconomic and cultural backgrounds will also further the governmental purposes of the Library by serving as a model to other public and private entities, by building the public trust, by creating role models, and by facilitating the interaction of persons of different backgrounds; and

WHEREAS, the Board of Directors of the St. Louis Public Library (the "Board") determined that it is feasible, necessary and in the public interest for the Board to adopt a diversity statement to provide guidance to the Library and adopted this Diversity Statement on March 31, l 997; and

WHEREAS, the Board wishes to amend this Diversity Statement to provide for annual review.

NOW THEREFORE, the Board of Directors of the St. Louis Public Library; does hereby resolve, determine and order as follows:

Section 1. Findings. The Board of Directors of the St. Louis Public Library hereby finds and determines those matters set forth in the preambles hereof as fully and completely as if set out in full in this Section l.

Section 2. Diversity Statement. The Board of Directors of the Library hereby directs the officers and agents of the Library for the authorized Library purposes set forth in the preambles hereof and subject to the conditions hereinafter provided to develop and implement policies which encourage persons with diverse ethnic, religious, socioeconomic and cultural backgrounds in the City to contract with or become employed by the Library.

Section 3. Administration. The officers and agents of the Library are authorized and directed to (i) encourage by direct contact or general solicitation persons from diverse backgrounds to contract with or become employees of the Library; (ii) educate through seminars and workshops persons from diverse backgrounds of the opportunity to contract with or become employees of the Library; (iii) assist persons from diverse backgrounds to contract with or become employees of the Library; (iv) adjust or modify, when appropriate, financing, bonding or insurance requirements for persons from diverse backgrounds to contract with or become employees of the Library; (v) encourage partnering by persons from diverse backgrounds to contract with the Library; (vi) utilize alternative programs to facilitate participation; (vii) provide flexible provisions to account for special circumstances; (viii) maximize opportunities for persons to demonstrate any social, socioeconomic or other factors that would promote the Library's best interests; and (ix) adopt measures to minimize the impact of this policy on the rights of third parties.

Section 4. Actions of Officers Authorized. The officers of the Board, including the President, Vice President and Secretary of the Board and the Executive Director shall be, and they hereby are, authorized and directed to execute all documents and take such actions as they may deem necessary or advisable in order to carry out and perform the purposes of this Resolution and to make ministerial alterations, changes or additions in any agreements, statements, instruments and other documents herein approved, authorized and confirmed which they may approve and the execution or taking of such action shall be conclusive evidence of such necessity or advisability.

Section 5. Annual Review. The officers of the Board are authorized and directed to report upon the administration of the Diversity Statement at the Board's regular meeting in September of each year.

Section 6. Severability. If any section or other part of this Resolution whether large or small, shall for any reasons be held invalid, the invalidity thereof shall not affect the validity of the other provisions of this Resolution.

Section 7. Governing Law. This Resolution shall be governed exclusively by and construed in accordance with the applicable laws of the State of Missouri.

Section 8. Effective Date. This Resolution shall become effective immediately upon its passage.

ADOPTED by the Board of Directors of the St. Louis Public Library this 5th day of April, 2004.

BOARD OF DIRECTORS OF THE
ST. LOUIS PUBLIC LIBRARY

Its President

Its Secretary