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architecture | interiors

project manual

new project for:



545 Leffingwell Avenue
Kirkwood, Mo. 63122-6454

procurement & contracting requirements

specifications

Project Manual 1 of 2

Monday+March 30, 2026
Architect Project No.: 24059

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SECTION 00 01 11

ARCHITECTURAL PROFESSIONAL SEAL

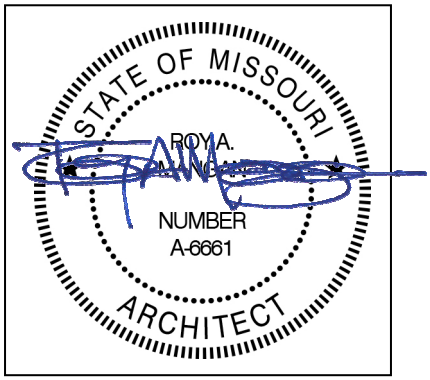
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ARCHITECTURAL PROFESSIONAL SEAL:
NAME: ROY A. MANGAN
MISSOURI LICENSE NO.: A-6661
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: ARCHITECTURAL
TITLE: PRINCIPAL, RA
COMPANY NAME: ARCHIMAGES, INC.



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SECTION 00 01 12

STRUCTURAL PROFESSIONAL SEAL

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STRUCTURAL PROFESSIONAL SEAL:
NAME: Jason N. Richards
MISSOURI LICENSE NO.: 2000162164
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: STRUCTURAL
TITLE: Managing Principal
COMPANY NAME: kpff Consulting Engineers



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SECTION 00 01 13

FIRE PROTECTION PROFESSIONAL SEAL

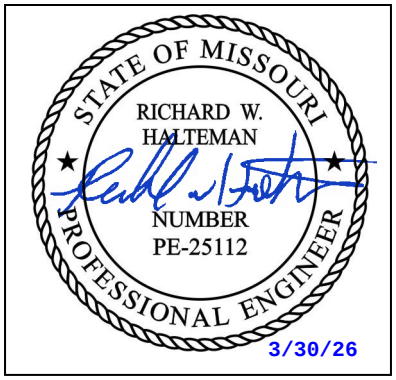
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FIRE PROTECTION PROFESSIONAL SEAL:
NAME: RICHARD W HALTEMAN
MISSOURI LICENSE NO.: E-25112
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: FIRE PROTECTION
TITLE: SENIOR PROJECT MANAGER
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 14

PLUMBING PROFESSIONAL SEAL

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PLUMBING PROFESSIONAL SEAL:
NAME: RICHARD W HALTEMAN
MISSOURI LICENSE NO.: E-25112
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: PLUMBING
TITLE: SENIOR PROJECT MANAGER
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 15

HEATING, VENTILATING and AIR CONDITIONING PROFESSIONAL SEAL

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HEATING, VENTILATING and AIR
AIR CONDITIONING PROFESSIONAL SEAL:
NAME: RICHARD W HALTEMAN
MISSOURI LICENSE NO.: E-25112
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: HEATING, VENTILATING and AIR CONDITIONING
TITLE: SENIOR PROJECT MANAGER
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 16
ELECTRICAL PROFESSIONAL SEAL

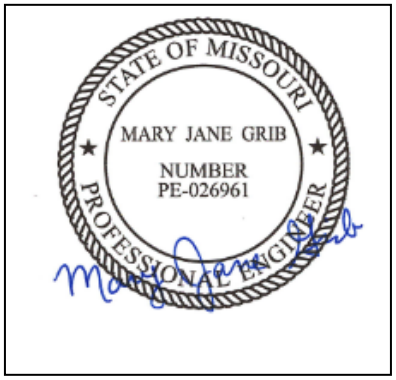
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ELECTRICAL PROFESSIONAL SEAL:
NAME: Mary Jane Grib
MISSOURI LICENSE NO.: PE-026961
LICENSE EXPIRES: DECEMBER 31, 2027
DISCIPLINE: ELECTRICAL
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 17

COMMUNICATIONS PROFESSIONAL SEAL

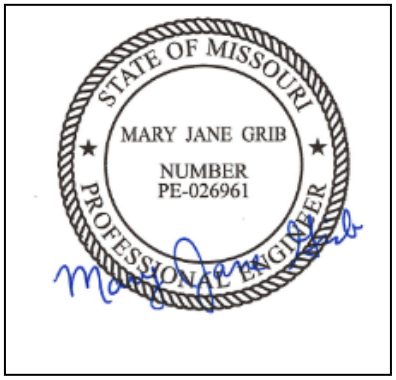
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COMMUNICATIONS PROFESSIONAL SEAL:
NAME: Mary Jane Grib
MISSOURI LICENSE NO.: PE-026961
LICENSE EXPIRES: DECEMBER 31, 2027
DISCIPLINE: COMMUNICATIONS
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 18

ELECTRONIC SAFETY and SECURITY PROFESSIONAL SEAL

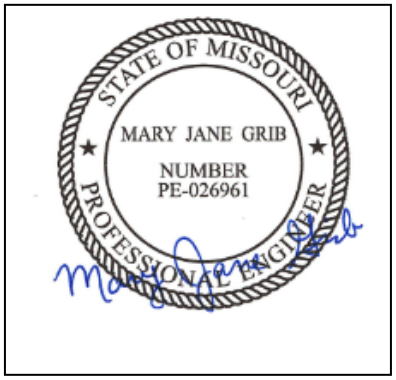
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ELECTRONIC SAFETY and SECURITY PROFESSIONAL SEAL:
NAME: Mary Jane Grib
MISSOURI LICENSE NO.: PE-026961
LICENSE EXPIRES: DECEMBER 31, 2027
DISCIPLINE: ELECTRONIC SAFETY and SECURITY
TITLE: Senior Electrical Engineer
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 19
CIVIL PROFESSIONAL SEAL

Disclaimer of Responsibility:

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CIVIL PROFESSIONAL SEAL:
NAME: BRANDON A. HARP
MISSOURI LICENSE NO.: E-28650
LICENSE EXPIRES: DECEMBER 31, 2027
DISCIPLINE: CIVIL
TITLE: PRESIDENT
COMPANY NAME: Civil Engineering
Design Consultants



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City of Kirkwood
Public Services Facility
Bidder's Scope of Work

The Owner's Representative (OR) referred to below is NAVIGATE Building Solutions, LLC. The Owner referred to below is the City of Kirkwood. The Contractor referred to below is the General Contractor (GC). This bid package includes, but is not limited to, the following:

1. **Bidders shall submit bids through IONWAVE only. Bidders will need to go to https://kirkwood.ionwave.net/Login.aspx and set an account.**

2. Scope shall include all work outlined by the project documents (plans and specifications) issued by Archimages, Inc. dated March 30, 2026. The scope of work includes the renovation of an existing structure located at 545 Leffingwell Ave 63126. Repurposing a former moving and storage business into the Kirkwood Public Services Facility. The scope encompasses some site improvements including paving, adjustment to an existing storm detention basin, ramps accessing the building and some site utility modifications. The building scope will include selective demolition, MEP/FP adjustments and /or upgrades, a new exterior portable engine generator docking station, interior trench drains, masonry, metal studs and drywall, overhead doors, some structural steel, painting of the exterior, limited roofing scope as well as finishes in the water department, break room, locker rooms and in the office areas.

3. In addition to managing its own subcontractors, **the GC shall be tasked with managing several Owner direct vendors** including, but not limited to fire alarm, door controls and surveillance. See the matrices of responsibility in the design documents for additional information.

4. Draft AIA 101 and AIA 201 have been modified from their original versions. Contractors shall read and agree to these documents as part of the bid process. Submission of a bid confirms acceptance of the agreement as provided.

5. Contractor is aware of the potential for Liquidated Damages. Contractor shall be responsible to maintain scheduled items for the Contractor's work as included in the Master Project Schedule below. Contractor shall reference the City-Contractor Agreement included in the bid documents. Contractor agrees to pay the Owner, or to deduct from the Contract Sum, not as a penalty, but as liquidated damages, the amount of **$1,000**/ day.

6. Contractor shall be expected to execute and produce the contract within 10 days of receipt, along with Bonds and Insurance. No time extension will be considered as a result of exceeding this window.

7. Upon execution of this contract, this contractor must submit to the OR a detailed critical path baseline construction schedule outlining each construction activity and phase. This schedule must fall within the Master Project Schedule outlined below and be submitted no later than twenty-one (21) calendar days following the agreement date. Contractor is required to provide an updated work schedule, at a minimum, monthly basis with each pay application. Contractor's detailed activity schedule/critical path schedule shall adhere to the Master Project Schedule and shall provide for expeditious and practicable execution of the Work.

Should the Contractor fall behind schedule by more than **5 work days** due to the fault of this Contractor, the Contractor shall provide a recovery schedule to the OR within 5 days of request by the OR.

Master Project Schedule Milestone Dates:

1. Request for bids — March 30, 2026
2. Pre-bid meeting – on site — April 7, 2026 at 2:00 PM
3. Last b RFIs due — April 17, 2026 at 5:00 PM
4. Last bid addenda Issued (if necessary) — April 21, 2026 at 5:00 PM
5. Receipt of bids — April 28, 2026 at 2:00 PM
6. Supplemental bid information due — April 29, 2026 at 2:00 PM
7. Final Board approval anticipated — May 21, 2026
8. Anticipated agreement tendered/ Notice to Proceed — May 22, 2026
9. Submittals submitted for review — Within 30 days of NTP
10. Substantial Completion / Punchlist Populated (Day ___*) *Based on Bidder's Proposed Duration, or **365 calendar days maximum**.
    All Life Safety Inspections & Occupancy Inspections to be completed on or before Substantial Completion date. All rough ins for Owner provided scopes to be complete.
11. Final completion — 30 Days from Substantial Completion
12. Owner relocated equipment & final connections of same, IT, relocating furniture, security to commence at substantial completion.

8. Contractor accepts all risks associated with adverse weather. No time extensions will be granted related to claims of adverse weather. No claims for extra costs will be granted related to adverse weather and/or taking action to deal with adverse weather and/or the effects of adverse weather. All provisions in the City-Contractor Agreement otherwise respecting weather are superseded by this provision, and are of no force and effect.

9. Any claims for delay to critical path activities shall be submitted to the Owner's Representative within 24 hours of occurrence, identifying the event and the impacted critical path activity. The Owner's Representative will review to determine if the claim will be considered a valid delay. Each day claimed shall be tracked on a log for review at the bi-weekly Owner meetings.

10. Contractor is required to provide detailed work schedule (short term schedule) on a weekly basis. Contractor's detailed work schedule shall adhere to the Master Project Schedule and the accepted contractual project duration. Contractor shall meet the requirements of the Master Project Schedule.

11. Provide all supervision, labor, tools, equipment and materials to complete the work.

12. Perform all unloading, loading, distribution and hoisting of materials for this scope of work.

13. Furnish, install, maintain and remove temporary on-site trailers and storage containers as required to perform the work. Trailer shall include a conference room with table and chairs for Owner and Architect meetings, and other meetings as needed.

    a. Contractor shall provide office for OR with desk, chair, printer and access to internet for Project Manager use during on site supervision and monitoring activities.

14. Perform all work in accordance with OSHA standards (including OSHA 10-hour requirement). This Contractor is responsible for OSHA required safety railings (installation, maintenance and removal) including appropriate OSHA approved system for roof edge protection for all trades. Contractor shall maintain copies of all SDS sheets onsite at the job trailer.

15. Provide ladders for all contractors to access the roof until the permanent means are in place and available for use.

16. The Owner will furnish the City of Kirkwood Building/Fire Permit at no cost, including fire alarm and fire protection. The GC is responsible for making application(s). The GC (or its subcontractors) are responsible for all other permits, if required and fees required by state, county, local, regional, and federal authorities, and agencies associated with this scope of work, ie: electrical through St. Louis County (mechanical & plumbing through Kirkwood), utility companies (including the Metropolitan Sewer District of St. Louis (MSD), Missouri American Water (MOAM)). This Contractor is required to comply with all permit requirements and inspection requirements associated with such permits. This Contractor and it's subcontractors are also required to obtain a Business License from the City of Kirkwood if required.

17. Coordinate all work with the OR.

18. Bi-weekly meetings at the jobsite will be held with the OR. The work of this contractor must be performed in accordance with the decisions and schedules formulated at these meetings so as not to delay the work. The Contractor's Project Manager and Foreman/Superintendent must be present at these meetings. This contractor shall keep minutes of these meetings and forward to the OR for review within 3 working days after the meeting.

19. Weekly meetings at the jobsite SHALL be held with this contractor and its subcontractor's Foreman/Project Managers to coordinate installation of all systems. The Owner, Architect and the OR shall be invited to all of these meetings and will attend at their discretion. This contractor shall prepare an agenda that includes at a minimum the following topics to be discussed and coordinated with critical path subcontractors, i.e.: Schedule, RFIs, Submittals, factors affecting progress, long lead procurement deliveries, etc. This Contractor must keep minutes of these meetings and forward to the OR, A/E and Owner for review weekly.

20. General Contractor and its HVAC, Plumbing, Fire Protection and Electrical subcontractors will be expected to coordinate above-ceiling work prior to installation, including the creation of drawing overlays to identify and address interferences prior to installation as needed.

21. This Contractor shall provide all surveying and layout required to complete the work. Reliance on CAD or other electronic files, obtained from the design team, will not relive GC or responsibility to confirm layout prior to starting work.

22. Review all drawings and specifications and accept responsibility for requirements, general notes, notes, specifications, and details as they relate to this scope of work.

23. General Contractor will install, maintain, and remove all SWPPP scope of work. Contractor will provide all SWPPP reports per MDNR standards. Provide SWPPP reports to the OR on a weekly basis and immediately following each rain event.

24. This Contractor is responsible for locating all public and private utilities.

25. Provide street cleaning to remove dirt, mud, and debris generated by the project site as needed to maintain a clean surface at existing drives, parking lots and public roads.

26. Take note of nearest water source and the schedule for water line installation; if no water is available on site, provide alternative means for tire wash down of trucks prior to leaving the site.

27. Provide barricades, signage, flagging and flagman for traffic control and public safety during the execution of the work. Coordination of all road closures (full or partial) with OR and City officials.

28. Protect adjacent properties and utilities as required during the execution of this work. Provide shoring or underpinning as required for safe excavations to meet OSHA requirements and to protect adjacent streets, sidewalks, utilities and existing structure(s). If this requires engineered shoring systems, this Contractor will provide as needed for this scope of work.

29. This Contractor to cleanup all rubbish and debris from site and building on a daily basis. This includes legal off-site disposal of all rubbish and debris along with excess spoils, unsuitable materials, excess materials such as concrete, sand and masonry materials. Trucks or dumpsters to haul off material by this Contractor.

30. This Contractor shall furnish all dumpsters for the entire project and shall include cost to haul offsite and legally dispose of all construction rubbish and debris.

31. This contractor to broom clean all floors at least once a week to ensure housekeeping stays up to par.

32. This Contractor shall provide a heavy construction cleaning prior to punch list creation so all surfaces can be observed by the design team. Clean exterior and interior surfaces exposed to view; remove temporary labels, stains, putty, soil, paint and foreign substances from all surfaces, including glass and painted surfaces; polish transparent and glossy surfaces; clean equipment and fixtures to a sanitary condition; replace air filters in mechanical equipment at substantial completion; clean roofs, gutters, and downspouts; remove obstructions and flush debris from drainage systems; clean site; sweep paved areas and rake clean other surfaces; remove trash and surplus materials from the site; clean and polish all floors; clean and polish all hardware; and repair all Work damaged during cleaning.

33. Provide final cleaning of all buildings and site prior to occupancy.

34. Contractor will provide temporary construction toilets for the project for all contractors, visitors, etc.

35. Contractor will provide ice, cups and distribute drinking water as needed for workers performing this scope of work.

36. This Contractor and all subcontractors will be responsible to review all specifications and drawings.

37. Contractor must not burn in the concrete at the carpet tile, vinyl, or other resilient flooring locations. Contractor to ensure floors are kept dry and clean so that the concrete can dry in order to accept adhesive for flooring products. Include moisture mitigation to comply with the specifications.

38. The Owner, Architect, and OR will be very stringent on the quality of exposed concrete floors during punch list. It is ultimately in this Contractor's scope of work to protect all finish products through education, signage, and temporary protection. Proper concrete protection from staining must be observed and will be enforced. Steel must not be placed on slab to avoid staining. Diaper hydraulic powered equipment to avoid oil and gasoline staining. Pipe cutting machines shall not be used on the concrete slabs where the exposed concrete finishes are scheduled. Any rubber-tired traffic shall be kept at a minimum and shall be protected with drop cloths.

39. Plan concrete floor pours such that a single pour covers any continuous area of architecturally exposed concrete, stained concrete or polished concrete floors.

40. No lignite to be allowed in any interior or exterior flatwork concrete.

41. Contractor to furnish first aid and safety supplies as needed for this scope of work.

42. Contractor is solely responsible for site/project safety for this scope of work.

43. Contractor to maintain Site Specific Safety Plan which shall be completed and kept in their job trailer at all times.

44. Contractor to grout fill frames per architectural details and notes.

45. Provide code compliant seismic support and bracing as required for installation of acoustic ceiling systems per contract documents.

46. Provide fire stop systems as required for the installation of this scope of work.

47. Provide stenciling of rated walls according to the AHJ requirements.

48. Include cost to furnish and install toilet accessories as indicated.

49. Include wall blocking, whether shown or not, as needed for **ALL** toilet accessories, TV's, etc. regardless of OFCI, OFOI, or CFCI status.

50. Contractor to provide and maintain weather protection for material and work as required by the project schedule. Contractor to also provide any cold or hot weather measures for weather sensitive materials like concrete, masonry, roofing materials, air/vapor barrier, etc. This shall include but is not limited to tenting and heating for masonry installation. Delays will not be awarded for construction activities impacted by hot/cold temperatures. If wet site conditions are hindering the progress onsite and access for trades, this Contractor shall provide temporary rock access to those areas to maintain the project schedule.

51. Include water pumping and dewatering necessary to proceed with work being performed under this bid package. Refer to Geotechnical Report for anticipated groundwater.

52. This Contractor is responsible for securing the building once it is reasonably possible to do with temporary or permanent measures at the close of every day. Any temporary openings in walls are to be secured at the end of the work day.

53. This Contractor to supply, install, maintain, move and remove temporary site fence with gates if none exist. See Site Logistics Plan in bid documents.

54. Provide and remove temporary rock parking for visitors to the site, temporary construction parking, staging, and laydown areas. Location of all staging/trailer placement/access to be coordinated and approved by the OR. See Site Logistics Plan in bid documents.

55. General Contractor shall place rock around the building perimeter to create an all-weather access path for crane access and exterior wall construction as needed to maintain schedule.

56. Contractor is responsible for any coordination of staging or relocation for materials for this scope of work after initial unloading.

57. Soil testing, concrete testing and the Special Inspections listed on structural plans shall be performed by Owner's consultant and paid for by Owner. Contractor shall assist and coordinate/schedule with the agency to perform onsite testing work as needed/required by the documents. If the agency must re-test or re-inspect for failed tests/inspections or if the Contractor fails to notify the testing agency of a cancelled test/inspection, this Contractor shall compensate the Owner for such tests.

58. The Owner may opt to utilize a third-party exterior envelope testing agency. General Contractor to assist with such testing at no additional cost.

59. The Owner may opt to utilize a third-party Commissioning agent. General Contractor to assist with such agent at no additional cost.

60. No smoking shall be allowed inside the building once interior construction begins.

61. **Full-time onsite superintendent** is required when any Work is taking place. Contractors shall consider the size and complexity of this project when determining the balance of the project's project management staff. Contractor shall assign staff as needed to maintain project progress and oversight. Contractor shall assign project manager/engineer/superintendent to the project with relative similar industry and project-type experience, availability, and workload capacity.

62. The contractor **shall** use Procore Project Management software program, or an approved equal, for coordination of project RFIs, submittals, change orders, etc. Contractor shall be the administrator and maintain all records in the program, and **shall** grant access to the Owner, OR and design team members. Include the cost associated with the use of such program.

63. This Contractor shall produce a submittal log at the beginning of the project that is populated with all of the required submittals for this scope of work and assign due dates for submission to the Architect and due dates for return from the Architect. This log must be submitted to the OR and Architect for review on a weekly basis.

64. The Project Milestone Dates identify when all submittals shall be submitted for review. This milestone does not relieve the Contractor of completing select submittals sooner, as needed to meet the overall project schedule for installation of the work.

65. This Contractor shall maintain an RFI log for this scope of work. This log must be submitted to the CM and Architect for review on a weekly basis. Log to include:

    a. RFI number
    b. Topic of RFI
    c. Date submitted
    d. Date requested response by
    e. Date returned
    f. Status- Open or Closed

66. Immediately upon award, this Contractor shall submit any proposed revisions to Site Logistics Plan for review. The Owner, OR, Contractor, and Architect will meet to review and discuss site logistics and finalize an agreed upon plan of action for construction parking, office/storage containers, temporary toilets, temporary site fence, etc.

67. This Contractor must prepare and make available upon request, a procurement log for this scope of work for all long lead materials and equipment. Procurement log must include date of order, date of confirmation of order, expected delivery date, actual delivery date, and comments noting any changes to dates and reasons for change.

68. This Contractor shall organize and arrange for pre-installation meetings for this scope of work for all major scopes of work with the subcontractors and manufacturers prior to commencement of those activities and invite the Owner, Architect, and CM to all pre-installation meetings (must give at least 2 weeks notice of meetings). This contractor shall keep minutes of those meetings and forward them to the OR and Architect for review.

69. This Contractor will be responsible for submitting daily logs containing the number of workers, equipment, work accomplished, daily weather, deliveries, visitors to the site, any inspections passed or failed, problems encountered, and other relevant data as may be required. These reports must be emailed to the OR daily, within 24 hours of work performance.

70. Provide photographs of all below slab, in slab, and in-wall rough in prior to cover-up. Organize photos electronically and label with location on corresponding floor plan. Submit ‘rough in photograph’ package at the end of the project. OR may ask for progress photos during project as needed for reference or coordination.

71. This Contractor shall arrange, schedule, organize and video tape as it pertains to this scope of work all equipment start-ups and Owner Training sessions per contract documents. These training sessions shall be recorded professionally by a videographer, including lapel mics for person providing the training, etc. A DVD or thumb drive (at Owner’s option) including copies of each training session (organized as individual Chapters) shall be provided as part of the closeout documents.

72. This Contractor must populate a closeout log and submit to the OR and Architect for review to verify that all required items have been included. Once approved, this log will be used to track required closeout items prior to final payment. This contractor is highly encouraged to submit O&M requirements as soon as possible in advance of final acceptance to help eliminate delay in payment.
73. This Contractor is responsible for any temporary heating/cooling, humidifying/dehumidifying as needed to maintain the project schedule and as needed prior to starting the permanent HVAC equipment. Use of the new HVAC system will not be allowed during construction. Contractor also responsible for any extended warranties needed to provide the Owner with the required contractual warranty durations.

74. This Contractor shall be responsible for the cost of temporary utilities usage for all trades during the course of construction including but not limited to: gas, electric, sewer, water. Contractor is responsible for any backflow preventer costs/water usage costs for hydrant use. Upon Substantial Completion, OR will work with Contractor and Owner to transfer all utilities into the Owner's name.

75. Contractor shall coordinate, furnish and install temporary transformer, if needed, according to Kirkwood Electric requirements.

76. Furnish and install concrete transformer pad per Kirkwood Electric Specifications.

77. Clean all HVAC coils and replace all filters with new filters at the time of building turnover to the Owner.

78. All ductwork ends to be sealed before arriving at site and seals at end of runs to be maintained.

79. This Contractor will compile for the Owner a 'record set' of all documents and drawings, as it pertains to this scope of work, for the project at Substantial Completion. This shall be 'red-lined' copies of all project changes throughout the course of the project to identify all systems as they were actually installed on the project for the Owner's records. These must be electronically recorded and submitted to the Owner in pdf format.

80. As-built Surveys will be required by this Contractor at the Completion of the Project, including for Site Utilities, rain gardens, detention basins, etc. to submit to Utility company/department or City/County for final approval. A portion of retainage will be held until all surveyed as-builts have been submitted and accepted by the utility company and authorities having jurisdiction.

81. Contractor is required to hold their alternate pricing that was included in the bid form for 3 months after the bid date, unless noted otherwise in the alternate description. Contractor will notify OR when decisions need to be made regarding the acceptance of bid alternates in order to maintain deliveries, installation, and the master project schedule.

82. The Master Project Milestone Dates include all work proposed in the Bid Alternates. No time extensions will be granted for accepted Alternates.

83. Unit prices, if provided, on the Bid Form are incorporated into the contract and shall apply to the condition described in the unit price, regardless of which subcontractor performs the work or when the work is being performed.

84. Construction work shall only be allowed during hours permitted by the City of Kirkwood. If Contractor opts to work outside of those hours, they must contact the OR/City to obtain permission.

85. During the warranty period of the project, this Contractor shall document, maintain and update a Warranty Log of all warranty items, weekly, to be shared with the Client and OR. Contractor shall acknowledge the Owner's warranty call within 4 hours and keep the Owner apprised of the resolution status. Any roof or building envelope leaks or elevator issues or any issue that interferes with regular building operations shall be considered as urgent / emergencies. Contractor to provide a 24-hour on-call service for such urgent or emergency items.

86. Builder's Risk to be carried by the General Contractor. Deductibles to be paid by General Contractor.

87. Contractor is required to maintain access to the work as needed to maintain schedule.

88. No change orders will be issued for material cost increases or impacts of tariffs that occur during the project.

89. This Contractor shall provide an opportunity for a ground-breaking ceremony. General Contractor to provide a twelve-inch high mound of lose dirt, three feet wide and forty feet long to be removed after ceremony.

90. If this contractor chooses to backfill foundation walls prior to that time which is approved/allowed by the structural engineer, this Contractor is responsible for designing, installing, rental (and eventual removal) of all temporary shoring of foundation walls prior to backfill.

91. Provide housekeeping pads.

92. Proof roll subgrade prior to placing base rock for paving.

93. Asphalt lifts shall be no greater than 3" thick.

94. Provide site bollards complete with footing, anchoring, concrete fill, painting or plastic covers.

95. Provide all interior and exterior signage shown required for occupancy. Kirkwood provides all other signage.

96. No change orders will be awarded for additional forming or additional concrete in over-exacted footings.

97. All areas must be left at the end of each day so that there is no standing water. Grade temporary swales to drain site, if necessary, to achieve this requirement.

98. Strip topsoil, stockpile, and stabilize until ready for use. Spread topsoil to the depth required by civil and landscape drawings and landscape specifications.

99. Pressure test and chlorinate new site water lines. Provide test reports to Owner verifying acceptable pressures and chlorination. Coordinate with utility company / fire district and obtain approval from those parties as required.

100. Verify that all plumbing fixtures are mounted at ADA height required by AHJ.

101. Include all caulking and sealants for all systems and materials furnished and installed on the bid documents.

102. Provide access panels needed for all work installed under this contract regardless if shown or not.

103. Provide a mockup per documents of the building envelope materials and construction techniques. The mockup should reflect the project document details and be installed exactly as indicated on the drawings. The purpose of the mockup is to not only review and achieve an approval of the materials, but also to ensure the transition of the materials results in a good watertight condition. Contractor to follow the mockup guidelines outlined in the project documents. If the Contractor questions a detail provided, it should be submitted as an RFI and discussed with the project team prior to the construction of the mockup.

104. Contractor must include Professional Liability and errors and omissions insurance for the design-build scopes of work (delegated design) that are required by specifications to designed by a professional engineer. Drawings and calculations shall be signed and sealed by a Professional Engineer registered in the State of Missouri.

105. Review with the Owner/Fire Marshall before ordering the Knox box. Contractor shall include cost of the box and installation.

106. The CONTRACTOR shall provide three project signs. The sign will include the Owner's logo, design team logos, OR logo and the Contractor logo. They shall also include the project name and expected completion timeframe. No other project signs will be allowed on the project for advertisement. The sign needs to a minimum of 4' by 8'. The sign will be installed at locations to be approved by the Owner. They must comply with all Kirkwood sign ordinances.

107. All disturbed landscape areas must be replaced to their pre-construction condition at the end of the project unless noted otherwise on the Project Documents. This includes areas disturbed by this Contractor outside of the parcel boundary, on adjacent properties, and along the ROW.

108. Contractor shall submit to the OR a detailed Schedule of Values for review and approval prior to the submission of the first pay application. **If the GC, subs or material suppliers wish to invoice for shop drawings, stored material or any other scope prior to the work being in place it shall be broken out for pre-approval in the SOV. If not, the Owner is under no obligation to make payment on undefined items**.

109. Contractor to include all low voltage cabling, testing and mapping as shown on the drawings and to each workstation in proposed systems furniture identified on the floor plans.

110. The Contractor and all sub-contractors are required to stay within the limits of construction. No equipment, material, vehicles, personnel, etc. are allowed outside the limits of construction.

111. Provide tree protection fencing as indicated on plans prior to mobilization in any area. Tree protection fencing to remain in place for duration of work activities in area.

112. The City of Kirkwood places a high value on its trees and landscaping around the construction site and recognizes the aesthetic, environmental, financial and educational benefits that trees provide to the environment. Consequently, we have established a zero net tree loss for this project. To that extent you damage and/or destroy a tree, or landscaping outside the construction zone, you will be held liable for, via a deductive change order, for the cost associated with trying to save the tree and/or any necessary extraction and installation of a comparable replacement. Methods and means for trying to save the tree and/or determining whether it requires extraction and replacement will be at the City's sole discretion. Prohibited Practices shall include, but are not limited to:
    a. Breaking branches, scraping of bark or unauthorized cutting.
    b. Nailing or bolting into trees or using trees as temporary support in any way (including cabling around any part of the tree)
    c. Unauthorized filing, excavating, trenching, or auguring within protected root zone.
    d. Compaction of or driving over protected root zone.
    e. Dumping of construction waste or materials within protected root zone.
    f. Storage of any materials or vehicles within the protected root zone.
    g. Disposal of liquid waste or contaminants in an area, which may impact protected trees or their protected root zones.
    h. Unauthorized removal or relocation of protected trees.
    i. Removal of tree protection barricades or construction fencing prior to completion of project.
    j. Any other practices listed in the landscape protection plan.

113. Participation goals for the project are as follows: See IONWAVE for Kirkwood requirements.

End of Section

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City of Kirkwood MO
New Public Services Facilities
Modification, Explanation to Change Order Fee

The maximum that will be allowed for overhead and profit on changes in work shall be as follows, expressed as a percentage of the basic cost of the change. The allowable percentages for profit or overhead may be less, depending on the nature, extent or complexity of the change, where the percentage is not commensurate with the responsibility and administration involved (such as the Contractor merely processing substantial Change Order to a Subcontractor) but in no event shall they exceed the following:

To the Contractor and/or its Subcontractor for work performed with their own forces **12%**
To the Contractor for work performed by other than its own forces **5%**
To the Subcontractor/Supplier for work performed with their own forces **12%**
To the Subcontractor/Supplier for work performed by other than its own forces **5%**

Not more than above specified percentages for overhead, bond, insurance, profit, and commission will be allowed to be added to the basic cost, regardless of the number of tiers of Contractors, Subcontractors or Sub-subcontractors.

The burden on labor may be indicated as a dollar/cents addition to the hourly rate or may be expressed as a percentage of the extended hourly rate costs. If required by the Owner, the Contractor shall provide a detailed breakdown to justify the labor burden. The Owner reserves the right to reject any labor burden which is inconsistent with other similar contractors or where the cost of fringe benefits are in excess of established labor agreements.

Material, equipment, and supply costs shall be quoted at the actual cost to the Contractor, or Subcontractor. Upon request, the Contractor (or Subcontractor) shall submit evidence to substantiate the costs. Said costs shall be quoted at trade discount prices, with quantity discounts also applied where the quantities warrant. In any proposal with material, equipment and supply credit, the credit shall be based on the actual Contract cost of the material (including trade and quantity discounts) less any charges actually incurred for handling or returning a material which has been delivered.

The percentages allowed for overhead and profit herein shall be deemed to include, and no further addition allowed the Contractor, Subcontractor or Sub-subcontractors for: (1) field and office supervision and administration, including the field superintendent and non-working foremen; (2) general insurance; (3) use or replacement of tools; (4) shop burden; (5) engineering costs; (6) performance (guaranty) and labor/material payment bonds; (7) cost of safety measure (including those imposed by OSHA); (8) permits, unless a new permit type is required; (9) warranty work.

Cost changes shall be computed by determining the basic costs enumerated below (as further specified under this Subparagraph), to which the overhead may be added, then the profit figure may be added, and finally adding the sales tax on materials if allowable.

For changes in the Work, the cost shall be determined as provided under this section. The Contractor shall submit an itemized list of quantities with the applicable unit costs and extended price for each, in such form and detail as required by the Owner. As a minimum, the detailed breakdown shall include and indicate the items enumerated below. Items (a) and (b) constitute the cost of labor, and items (a), (b), (c) and (d) constitute the basic costs referred to under this section.

a) Labor costs, itemized by each trade involved, showing the hourly rates for each, and the hours required for the change. Labor rates shall be the same for extra and credit computations and shall be the actual rate paid the workmen in accordance with established management labor agreements.

b) Burden on labor, which shall be only the actual costs of mandatory fringe benefits required by

established agreements, taxes on labor, worker's or workmen's compensation, insurance on labor as affected by payroll, unemployment taxes and insurance, including FICA and FUTA. No other costs will be allowed as burden on labor.

c) Quantities of materials, equipment, and supplies, at their actual costs, with unit costs indicated.

d) The cost of subcontracted work computed in the same way as provided for under this section.

e) Overhead, profit and commission as set forth herein.

f) Applicable sales tax on materials, added after the above computations are complete.

Subcontractors (or Sub-subcontractors) shall compute their costs in the same way and are subject to the same conditions of what may be included in the cost and the same maximum percentages for overhead and profit. To the Subcontractor's price, the Contractor may add up to a maximum of five percent (5%). For changes involving work of the Contractor with its own forces and work by a Subcontractor (or Sub-subcontractor), the commission shall be applied directly to the Subcontractor's price, with the overhead and profit figure applied only to the Work the Contractor performs with its own forces.

For changes involving both extra and credit amounts, the overhead and profit, or commission, shall be applied only to net difference where the extra exceeds the credit.

For changes resulting in a credit in the basic costs, a reasonable allowance for overhead, profit or commission may be required to be credited to the Owner, as approved by the Owner. In general, no credit for overhead, profit or commission will be required where the net change credit is minor or where the Change in Work indicates it is reasonable that no credit be allowed to the Owner due to the effort, cost or responsibility of the Contractor. In the event of substantial subcontract credits or for Work the Contractor does not provide or perform, a reasonable overhead, profit or commission credit shall be allowed to the Owner, as determined by the Owner.

If anytime, Contractor is directed to proceed in writing by the Owner or Owner’s Representative on a time and material basis for a change. The Contractor must notify Owner’s Representative when work is beginning, when it is complete and daily tickets must be submitted as backup documentation. Daily tickets to be signed daily and verified by the Contractor’s onsite superintendent and submitted daily to the Owner’s Representative. Any change order request submitted without these daily signed tickets will be rejected and will not be compensated.

Additional scope that is authorized to be completed on a T&M basis on behalf of the Owner, shall be documented as follows:

a) Contractor shall issue daily tickets identifying hours worked, classification of worker, materials used, internally or externally rented equipment, and subcontractors utilized.

b) The additional scope should be delineated from the base bid scope.

c) Hours worked shall be verified by the General Contractor’s Superintendent and/or Authorized Owner’s Representative and indicated by signature on daily work tickets.

d) There should be a separate ticket for each day that additional scope of work takes place.

e) Unit costs, material costs and rental rates will be evaluated accordingly to typical market value.

f) The contractor is responsible for expending costs with the Owner’s best interest in mind.

END OF SECTION

SECTION 00 31 00
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 ANNUAL WAGE ORDER No. 32

A. Annual Wage Order No. 32, issued by State of Missouri, St. Louis County, is effective at time of performance, this Work and constitutes a portion of the Contract Documents. Annual Wage Order No. 32 (in effect as of March 10, 2025), has been attached, end of this Section.

B. It is the responsibility of all Bidders, to comply with minimum wage rates, as set forth within said Annual Wage Order No. 32, including any subsequent Annual Wage Order regulations that may be issued, whenever Annual Wage Order No. 32 expires. Reference Section 00 73 00 - Supplementary Conditions for additional Content.

C. Contractor and each of their SubContractors, Vendors shall keep a detailed accurate record, indicating names and occupations of all laborers, workers and mechanics employed by them, in connection with this particular Project and also provide actual hourly wages paid to each person. This record shall be open at all reasonable hours to inspection by Owner, their Officers, Agents and the Director of Labor, their Deputies, Agents. These records of Employees and Wages Paid are required by Annual Wage Order No. 32. Architect will require an affidavit be submitted, stating compliance with said Annual Wage Order No. 32, within each Application for Payment. In addition, a weekly Certified Payroll submittal shall be required. **Payment will not be made**, unless all certified payroll documentation has been provided, said time period covered, within that Pay Application.

D. Contractor shall forfeit, as a penalty to Owner, Ten dollars ($10.00), for each worker employed for each calendar day, or portion thereof, if such worker is paid less than said stipulated rates, for any Work done within this Contract.

E. All Contractor's Bonds shall include such provisions, as will guarantee faithful performance of prevailing hourly wage clause, as delineated within Contract Documents.

F. Additional Content may be found within the Missouri Department of Labor website, http://www.labor.mo.gov.

G. Additional Content available via IONWAVE.

1.02 BUY AMERICAN ACT, “NOT APPLICABLE, THIS PARTICULAR PROJECT”

1.03 GEOTECHNICAL REPORT, “NOT APPLICABLE, THIS PARTICULAR PROJECT”

1.04 WATER PRESSURE FLOW TEST

A. Flow Hydrant 1:

1. Pitot Pressure (psi): 70

B. Flow Hydrant 2:

1. Pitot Pressure (psi): 40

PART 2 PRODUCTS, " NOT APPLICABLE, THIS PARTICULAR PROJECT "

PART 3 EXECUTION

3.01 OBTAINMENT OF PERMITS

A. Contractor shall pay for, secure, all necessary Permits, particular to this Project and Submit copies of same, including all receipts to Owner, Architect for review. **Overhead and Profit costs shall not be included within any portion of this pricing.** If approved, Owner shall reimburse Contractor said costs via Project Change Order.

B. Following Permits, Approvals shall be secured prior to commencing any Scope of Work, upon this particular Existing Project Site;

1. Zoning Board of Appeals, written notice of approval.
2. Planning Commission, written notice of approval.
3. Existing Project Site Scope of Work, written Permit documentation.
4. Demolition Scope of Work, written Permit documentation.
5. Foundation, Earthwork, Exterior Improvements, Utilities Scope of Work, written Permit documentation.
6. Building Structure Scope of Work, written Permit documentation, all Trades.
7. Any, all Scope of Work, written Permit documentation required by those Local Authorities having Jurisdiction.

END OF SECTION

Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MIKE KEHOE, Governor

Annual Wage Order No. 32

Section 100

ST. LOUIS COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2025**

Last Date Objections May Be Filed: **April 9, 2025**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$69.96
Boilermaker	$43.65*
Bricklayer-Stone Mason	$65.72
Carpenter	$66.94
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$59.71
Plasterer	
Communication Technician	$65.78
Electrician (Inside Wireman)	$77.36
Electrician Outside Lineman	$76.24
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$43.65*
Glazier	$69.12
Ironworker	$72.66
Laborer	$56.81
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$59.98
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$74.42
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$55.58
Plumber	$80.47
Pipe Fitter	
Roofer	$59.92
Sheet Metal Worker	$76.34
Sprinkler Fitter	$82.64
Truck Driver	$43.65*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.
**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.

Heavy Construction Rates for
ST. LOUIS County

Section 100

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$60.20
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$76.24
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$56.76
General Laborer	
Skilled Laborer	
Operating Engineer	$73.58
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$45.56
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

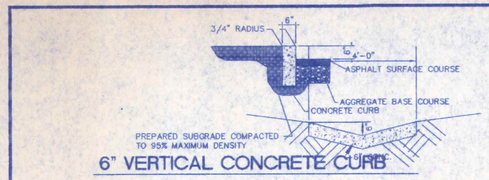
A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

A SITE PLAN OF
A. MRAZEK MOVING AND STORAGE
PART OF LOTS 66 AND 67 OF EAST KIRKWOOD
ST. LOUIS COUNTY, MISSOURI



6" VERTICAL CONCRETE CURB

CONCRETE SWALE DETAIL

NOTE: DETENTION BASIN TO BE SODDED.

A 4'(FEET) CHAIN LINK FENCE SHALL BE BUILT AROUND THE ENTIRE PERIMETER OF THE DETENTION BASIN WITH A MAN GATE AT THE WEST END FOR ACCESS.

RESIDUAL HYDRANT OPTION 1 (PREFERRED)

RESIDUAL HYDRANT OPTION 2 (ONLY IF OPTION 1 IS UNAVAILABLE)

FLOW THIS HYDRANT

NEW BUILDING ADDITION FF=600.73

EXIST. CONC. BLOCK COMMERCIAL BUILDING #545 LEFFINGWELL KIRKWOOD, MO 63122

600 S. ELLIOTT (VACANT PARCEL) LOC. # 24M24--0051 87183.69 SQ. FT. OR 2.00 ACRES

ENTRANCE TO BE REMOVED AND REPLACED WITH "GRASS-CRETE" OR EQUAL MATERIAL.

REMOVE AND REPLACE EXIST. GATE WITH NEW 18' WIDE GATE AFFIXED WITH A KNOX PADLOCK.

LOC. # 24M24-0013 219151.31 SQ. FT. OR 5.031 ACRES

ELLIOTT (60'W) AVENUE

LEFFINGWELL (60'W) AVENUE

BURLINGTON NORTHERN R.R. 100' W

ABANDONED SHORT (60'W) AVENUE PER ORDER BK 6490 P 1987 536

10' EASEMENT BK 6490 P 1987

10' ESMT TO CITY OF KIRKWOOD BK 289 P 553

30' MSD ESMT BK 6633 P 855

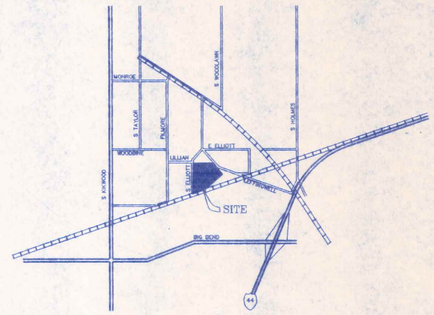
MSD # 24M3-014S

MSD # 24M4-001S

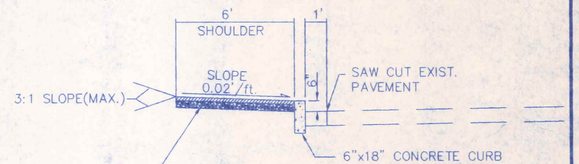
INDEX

SHEET 1 SITE PLAN
SHEET 2 GRADING PLAN
SHEET 3 PROFILES
SHEET 4 DRAINAGE AREA PLAN

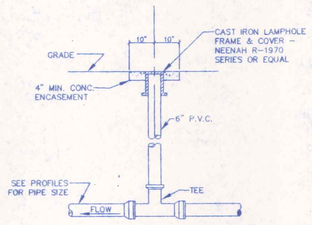
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.



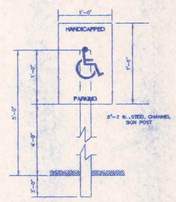
LOCATION MAP



CURB AND SHOULDER DETAIL
SOUTHWEST SIDE OF LEFFINGWELL



SAMPLING TEE
N.T.S.



-PROVIDE ONE SIGN PER HANDICAPPED SPACE.
-NO STEPS AT BUILDING ENTRANCES.
-PROVIDE 5'x5' LEVEL AREA AT HANDICAPPED SPACES.
-PROVIDE 60'S WIDE AREA OUTSIDE DRIVANCE FOR WHEELCHAIR MANEUVERABILITY.

HANDICAPPED PARKING SIGN

NOTE: ALL SEWER CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH THE METROPOLITAN ST. LOUIS SEWER DISTRICT STANDARD CONSTRUCTION SPECIFICATIONS FOR SEWER AND DRAINAGE FACILITIES, 1992.

PRELIMINARY
NOT FOR CONSTRUCTION

BENCHMARK: MSD 18-8: 664.49 - "L" AT NORTHEAST CORNER OF STONE DOOR STEP AT NORTHSIDE ENTRANCE TO CONCORDIA LUTHERAN CHURCH; SOUTHWEST CORNER OF LINDBERGH BOULEVARD AND WOODBINE AVENUE.

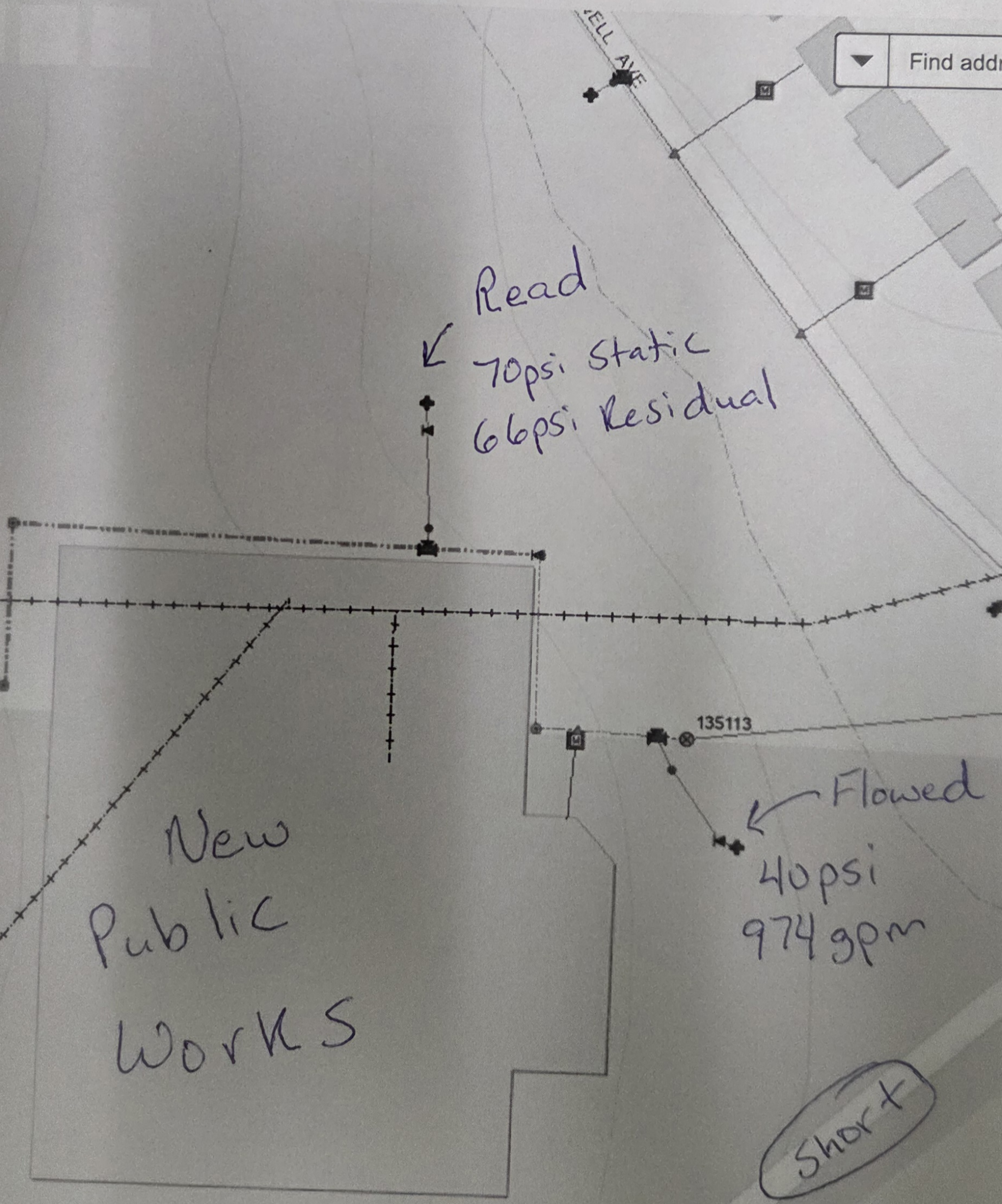
PREPARED FOR: CARR LANE MANUFACTURING
MR. EARL WALKER
4200 CARR LANE CT.
ST. LOUIS, MO 63119

MSD P# 23469-00
BASE MAP 24M3

DATE:	NO.:	REVISION:
7/11/00	1	KIRKWOOD WATER DEPT.

MUSLER ENGINEERING COMPANY
CIVIL ENGINEERING - PLANNING - LAND SURVEYING
32 Portwest Court, St. Charles Missouri 63303
Telephone: (636) 916-0444

DATE:	DRAWN:	CHECKED:	PROJECT NO.:	SHEET NO.:
6/14/00	JDN	RSM	00-490	1


ELL AVE
Find addr
Read
70psi Static
66psi Residual
135113
Flowed
40psi
974gpm
New
Public
Works
Short


40ps:
974
gpm
PSI
GPM
Hydro-Hitch™
www.hydrohitch.com

68 Pressão


70
psi
SPAN

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BID PROPOSAL FORM

The City of Kirkwood utilizes *IONWAVE* for bidding.

Go to https://kirkwoodmo.ionwave.net/Login.aspx to access the site. Bids shall be submitted via IONWAVE by 2:00 PM CST on April 28, 2026.

DO NOT submit bids to Kirkwood by any other means or to NAVIGATE Building Solution. They will be considered non-responsive. The supplemental bid form shall be submitted by email within 24 hours of the designated bid date & time. See supplemental bid form for additional information.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

Contact for the BIDDER Shall be provided through IONWAVE

BIDDER accepts all of the terms and conditions of the "Invitation to Bid" and the "Instructions to Bidders", including without limitation those dealing with the disposition of Bid Security.

STIPULATED SUM BID FORM

To be populated in IONWAVE. Below is an example of the information to provide.

The Bidder, in compliance with the Invitation for Bid for the project, and having carefully examined the Bidding Documents as set forth in the Project Manual, which documents are made a part hereof, as well as the site and all conditions surrounding and affecting the work, agrees to furnish all labor, materials, and supplies necessary to perform all the work in accordance with said documents and within the time and at the prices stated below.

BASE BID

City of Olivette – Community Center and Warson Park Improvements					
ITEM NO.	ITEM DESCRIPTION	UNIT	PRICE PER UNIT	QUANTITY	SUB-TOTAL
1	Base Scope	Lump Sum	**Enter in IONWAVE**	1	**Enter in IONWAVE**
2	P&P Bond	Lump Sum	**Enter in IONWAVE**	1	**Enter in IONWAVE**
3	Insurance	Lump Sum	**Enter in IONWAVE**	1	**Enter in IONWAVE**
4	Builder Risk Insurance Premium (exclude deductible value)	Lump Sum	**Enter in IONWAVE**	1	**Enter in IONWAVE**

Total of lines above shall equal the Total Lump Sum Bid Below.

Furnish all labor, tools, equipment, and material required to perform all work indicated for the City of Kirkwood New Public Services Facility, as defined in the Bid Documents for the TOTAL LUMP SUM AMOUNT of:

$_____ **Enter in IONWAVE**_____

TIME

Board approval and issuance of contract / Notice to Proceed is anticipated to occur by **JUNE 2026**. BIDDER hereby states that the time required to perform all work indicated in the BID DOCUMENTS (and any accepted alternates) and work necessary to complete the project per the duration proposed on this Bid Form is acceptable. Liquidated Damages in the amount of **$1,000.00** per calendar day shall be assessed for delays to Substantial Completion and are further described in the bidding and contract requirements.

The project shall be completed in no more than 365 calendar days from issuance of the contract/Notice to Proceed. Bidders may propose a shorter contractual duration for achieving Substantial Completion in the blank space below. An alternate duration may be considered as criteria for selection of General Contractor. See alternate #7

ALTERNATES - To be submitted at the time of Bid. Bids will not be accepted if these Alternates are not provided at the time of bid. Refer to specifications for full description of ALTERNATES.

ALTERNATE #1A: THIRD FLOOR POLICE DISPATCH

Add: $_____ **Enter in IONWAVE** _____

ALTERNATE #1B: WHOLE BUILDING GENERATOR

Add: $_____ **Enter in IONWAVE** _____

ALTERNATE #2A: RECYCLING CENTER ASSOCIATED SITE WORK

Add: $_____ **NOT USED** _____

ALTERNATE #2B: UPGRADED RECYCLING CENTER

Add: $_____ **NOT USED** _____

ALTERNATE #3: ENERGY MANAGEMENT SYSTEM

Add: $_____ **Enter in IONWAVE** _____

ALTERNATE #4: PAINT EXTERIOR OF BUILDING

Add: $_____ **Enter in IONWAVE** _____

ALTERNATE #5: SOUTH ROOF REPLACEMENT

Add: $_____ **Enter in IONWAVE** _____

ALTERNATE #6: STORM SHELTER

Add: $_____ **Enter in IONWAVE** _____

ALTERNATE #7: ALTERNATE DURATION

Total number of calendar days _____ **Enter in IONWAVE**_____
Add/ Deduct: $_____ **Enter in IONWAVE**_____

LIST OF PROPOSED SUBCONTRACTORS – To be submitted to Owner within 24 hours of the Bid Date and time. List all proposed subcontractors on the **"Supplemental Bid Information" form provided in the Specifications**.

REFERENCES – To be Entered in IONWAVE.

QUALIFICATIONS – To be submitted to Owner within 24 hours of the Bid Date and time. List all proposed subcontractors on the **"Supplemental Bid Information" form provided in the Specifications**.

END OF SECTION

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SECTION 00 41 10

CONTRACTOR'S AFFIDAVIT for PUBLIC CONSTRUCTION PROJECTS

STATE of; Missouri

COUNTY of ; St. Louis

THE UNDERSIGNED, BEING DULY SWORN, DOES NOW STATE and DEPOSE the following:

A. I am the_____(Title) of_____(Company) which is a Contractor for the **Kirkwood Public Works Renovation**, (Said Project) and authorized to sign this Affidavit, on said Company's behalf.

B. I have verified all information, set forth within this Affidavit. If any Subcontractors have been retained for this particular Project, I have also verified their information.

C. Contractor and all Subcontractors have Workers' Compensation Insurance, that will cover all employees working within this particular Existing Project Site and said Insurance shall meet or exceed all Requirements Established by Law, those Local Authorities having Jurisdiction.

D. Contractor and all Subcontractors have previously confirmed United States Citizenship, lawful status of all Workers employed within this particular Existing Project Site and will not knowingly employ any person, who is an unauthorized alien, in connection with any contracted services.

E. Contractor and all Subcontractors were previously informed by St. Louis County, of those requirements to pay Prevailing Wages and will pay said Prevailing Wages to all Workers employed upon this particular Existing Project Site, as established by current applicable Annual Wage Order No. 32, St. Louis County, State of Missouri or Federal Wage Order, whichever may be greater.

F. Contractor and all Subcontractors shall be in full compliance with all Federal Laws, requiring any Accredited Apprenticeship Program, wherever applicable.

G. Contractor and all Subcontractors shall have previously enrolled within and currently participate in a Federal Work Authorization Program, with respect to all employees working in connection with any contracted services.

H. Contractor and all Subcontractors shall be in full compliance with 34.600, RSMo. Contractor now hereby affirms they are not currently engaged in and shall not, for the duration of this Agreement, engage in any boycott of goods or services from the State of Israel, companies doing business in or with the State of Israel, or authorized by, licensed by, organized under, said laws of the State of Israel, or persons, entities doing business within the State of Israel.

I. Further Affiant sayeth naught.

_____

Authorized Officer of Contractor

SUBSCRIBED and SWORN BEFORE ME, This _____ Day of _____ , 2026.

_____

Notary Public

MY Commission Expires: _____

END OF SECTION

SECTION 00 41 20
NON COLLUSION AFFIDAVIT

Kirkwood Public Works Renovation
545 Leffingwell Avenue
Kirkwood, Mo. 63122-6454

STATE of: Missouri

CITY of: Kirkwood

_____ , being duly sworn, deposes and says that

they are _____*(Sole Owner, Partner, President, Secretary, etc.)

of_____ , said party making foregoing Bid, that such bid is not made in interest of, or on behalf of, any undisclosed Person, Partnership, Company, Association, Organization or Corporation. That said Bid is genuine and not sham or collusive, that this Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham Bid and has not directly or indirectly colluded, conspired, connived, or agreed with any other Bidder, or anyone else to put in a sham Bid, or that anyone shall refrain from Bidding, that said Bidder has not, in any manner, directly or indirectly, sought by agreement, communication or conference with anyone, to fix said Bid price of Bidder, or of any other Bidder, or to fix any Overhead, Profit or Cost Element of such Bid price, or that of any other Bidder, or to secure any advantage against this Public Body awarding the Contract or anyone interested in this Proposed Contract, that all statements contained within such Bid are true and further, that said Bidder has not, directly or indirectly, submitted his Bid Price or any breakdown thereof, or contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith to any Corporation, Partnership, Company, Association, Organization, Bid Depository, or to any Member or Agent thereof, or to any other individual, except to such person or persons, as have a Partnership or other financial interest within said Bidder in their general business.

Affiant further certifies that Bidder is not financially interested in, or financially affiliated with, any other Bidder for above stated Project.

SIGNED: _____

TITLE: _____

SUBSCRIBED and SWORN BEFORE ME, on THIS _____ DAY OF _____ , 2026.

_____

NOTARY PUBLIC

MY COMMISSION EXPIRES:_____

***In completing this form, any Title that is not applicable should be struck out. For example if the Contractor is a Corporation and this form is to be executed by its President, the words "Sole Owner, a Partner, Secretary, etc." should be struck out.**

END OF SECTION

SUPPLEMENTAL BID INFORMATION

This Supplemental Bid Information must be completed and received in its entirety no later than 24 hours following the bid opening. The completed Supplemental Bid information is required to be submitted **via email by 2:00pm CST on April 29, 2026.** Supplemental bid form to be emailed to:

Chris Krueger, Director of Public Services, Kirkwood kruegeca@kirkwoodmo.org
Tracy Girse, Sr. Procurement Officer/Analyst, Kirkwood girsetc@kirkwoodmo.org
David Lowell, Sr. Project Manager, NAVIGATE david@navigatebuildingsolutions.com
Roy Mangan, Principal, Archimages rmangan@archimages-stl.com

Name of Project: **City of Kirkwood MO, New Public Service Facility**

Date: _____

Contractor: _____

COST BREAKOUT for Base Bid:

Bidder shall provide the breakout of costs for the following divisions of work that are **included** in the Base Bid.

Divisions 1-13 Scopes of Work

_____ DOLLARS ($_____).

Divisions 14 Scopes of Work (Salt Dome)

_____ DOLLARS ($_____).

Division 21 Scope of Work (Fire Suppression)

_____ DOLLARS ($_____).

Division 22 Scope of Work (Plumbing trenches. Demo, plumbing & pour back))

_____ DOLLARS ($_____).

Division 22 Scope of Work (Plumbing less trenches)

_____ DOLLARS ($_____).

Division 23, 25 Scope of Work (HVAC, Temperature Controls, Testing & Balancing)

_____ DOLLARS ($_____).

Division 26, 27, 28 Scope of Work (Electrical, Low Voltage)

_____ DOLLARS ($_____).

Divisions 31, 32, 33 Scopes of Work (Sitework and Site Utilities)

_____ DOLLARS ($_____).

LIST OF PROPOSED SUBCONTRACTORS

Please list the two subcontractors in each category that the referenced Bidder is considering for subcontract award for materials, services, supplies, specialty contractors, etc. below. Also indicate if your firm has previously worked with the listed Subcontractor. Where not applicable for this Bid Package, please indicate "N/A." If you do not plan to use subcontractors, indicate below and return this form with your bid.

Scope of Work	Proposed Subcontractors	Have you worked with previously?
Demolition	1. 2.	
Earthwork / Clearing	1. 2.	
Delegated design modular retaining wall	1. 2.	
Site Utilities	1.	

	2.	
Asphalt	1. 2.	
Landscaping/ Irrigation	1. 2.	
Site Concrete	1. 2.	
Footings/ Foundations	1. 2.	
Concrete Flatwork	1. 2.	
Masonry	1. 2.	
Steel Fabricator	1. 2.	
Steel Erector	1. 2.	
Rough Carpentry	1. 2.	
Finish Carpentry	1. 2.	
Millwork/Casework	1.	

	2.	
Roofing patching	1. 2.	
Architectural Sheet Metal	1. 2.	
Caulking/Joint Sealants	1. 2.	
Doors, Frames, Hardware	1. 2.	
Framing / Drywall	1. 2.	
Ceilings	1. 2.	
Flooring	1. 2.	
Painting	1. 2.	
Overhead doors	1. 2.	
Fire Protection	1. 2.	
Plumbing	1.	

	2.	
HVAC	1. 2.	
Electrical / Low Voltage	1. 2.	

QUALIFICATIONS –

Organization

1. How many years has your organization been in business as a Contractor?_____
2. How many years has your organization been in business under its present business name?_____
3. Under what other or former names has your organization operated?
   _____
   _____
4. How many persons do you have working for the company?
   Operators:____ Carpenters: _____ Laborers: _____
   Superintendents: _____ Office Management: _____ Other Trades: _____
5. What is your company's EMR? _____
6. State the amount of the deductibles on all insurance that you will be providing for the Project:

   Workers Compensation Insurance: _____
   Commercial General Liability Insurance: _____
   Automobile Liability Insurance: _____

Experience

1. On a separate sheet list all projects completed by your firm in the past five (5) years, with a contract value of $15M or greater. List project name, client, architect,

total contract value, date of completion and percentage of the cost of work performed with your own forces.

2. List the categories of work that your organization normally performs with its own forces:

    1. _____
    2. _____
    3. _____
    4. _____
    5. _____

Claims And Suits

If the answer to any of the questions below is “yes”, please attach written description of details.

1. Has your organization ever failed to complete any work awarded to it?

    Yes:_____ No:_____

2. Are there any judgments, claims, arbitration proceedings, or suits pending or outstanding against your organization or its officers?

    Yes:_____ No:_____

3. Has your organization filed any lawsuits or requested arbitration with regard to construction contracts within the last five (5) years?

    Yes:_____ No:_____

Other Construction Work

1. On a separate sheet, list major construction projects your organization has in backlog and in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

2. State total worth of work in progress and under contract:
    $_____

3. State average annual amount of construction work performed during the past five years: $_____

4. State current bonding capacity: $_____

5. State name of scheduling system currently being used:

   _____

6. **On a separate sheet, list the construction experience and present commitments of the key individuals of your organization. Please identify which individuals you intend to commit to this project if awarded the Contract.**

Submitted By:

Bidder: _____

Address: _____

_____

Business Telephone: _____ Fax: _____

Typed/Printed Name: _____

Authorized Signature: _____

Title: _____

Date: _____

(Seal, if bid by a Corporation)

END OF SECTION

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AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor
where the basis of payment is a Stipulated Sum

AGREEMENT made as of the « » day of «»May in the year «»2026
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

«»«»City of Kirkwood MO
139 South Kirkwood Road
Kirkwood, Missouri 63122«»
«»

and the Contractor:
(Name, legal status, address and other information)

«»«»
«»
«»
«»TBD

for the following Project:
(Name, location and detailed description)

«»New Public Works Facility
545 Leffingwell
Kirkwood MO 63122

The Architect:
(Name, legal status, address and other information)

«»«»Archimages
143 West Clinton Place
St. Louis, Missouri 63122«»
«»

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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User Notes: (1466714180)

TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS

2 THE WORK OF THIS CONTRACT

3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

4 CONTRACT SUM

5 PAYMENTS

6 DISPUTE RESOLUTION

7 TERMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

The Construction Manager for the Project shall be Navigate Building Solutions ("Navigate"). All communications between Contractor and Owner shall be through Navigate on behalf of Owner. Navigate has the authority to take all actions on behalf of the Owner permitted by the Contract Documents, with the sole exception of agreeing to any Modifications to the Contract. Only the Owner's representatives, ~~XXX~~ David Weidler Assistant Chief Administrative Officer or Chris Krueger, Director of Public Services, have the authority on behalf of the Owner to agree to any Change Order and/or to otherwise agree to authorize any Modifications, with it being understood and agreed that any Modifications to the Contract must be executed by David Weidler Assistant Chief Administrative Officer or Chris Krueger, Director of Public Services~~XXX~~ on behalf of the Owner in order to be effective.

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ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[~~« »~~] The date of this Agreement.

[« »~~X~~] A date set forth in a notice to proceed issued by the Owner.

[« »] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

« »

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of all work related to new construction, associated sitework, site utilities and bid alternates, and anticipated soil treatment/remediation identified as being included in the Base Bid, within [XXX] calendar days from issuance of the Notice to Proceed. The Contract Time will not be adjusted for claims of adverse weather; Contractor has anticipated adverse weather in the proposed and accepted Contract Time. ~~Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:~~
~~(Check one of the following boxes and complete the necessary information.)~~

~~[« »] Not later than « » (« ») calendar days from the date of commencement of the Work.~~

~~[« »] By the following date: « »~~

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » ($ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

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§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

Time is of the essence. If the Contractor fails to achieve Substantial Completion of the Contractor's Work within the period of XX calendar days from issuance of the Notice to Proceed (as such Contract Time may be adjusted by time extensions otherwise permitted by the Contract Documents), the Contractor shall pay, and the Owner will assess, Liquidated Damages in the amount of $21,000.00 per day for each calendar day until Substantial Completion of the Contractor's Work is achieved. The Owner may deduct any such Liquidated Damages from any amount due or payable to the Contractor. «↔»

Final Completion: In the event that the Contractor fails to timely complete all punch list items and all requirements necessary to achieve Final Completion of the Contractor's Work within 30 calendar days following Substantial Completion, Contractor shall be responsible to Owner for any actual damages that the Owner incurs due to such delay with regard to additional costs the Owner expends to its Architect and/or Construction Manager. The Owner may deduct any such damages from amounts otherwise due the Contractor at Final Completion.

If the Contractor shall neglect, refuse, or fail to submit all of the project submittals within ninety (90) calendar days after Notice to Proceed, Contractor shall pay the Owner the stipulated sum of Five Hundred Dollars ($500.00) for each day beyond the submittal milestone.

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the «↔»last day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the «↔»last day of the «↔»following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than «↔»Thirty («↔»30) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

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.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and supported by the following documentation:

a) proof of stored materials, photographs of the material clearly labeled as "Property of XXXCity of Kirkwood";

b) certificate of insurance for facility where materials are stored, with indication of coverage for the stored materials;

c) copies of itemized invoices for the materials from the vendor/supplier

d) Bill of Sale;

e) Bailment Agreement.~~and~~

.3 and t~~T~~hat portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

~~«~~5%

Retainage shall be invoiced and paid upon Final Completion of the Contractor's Work, less such amounts as are attributable to 150% of the value of incomplete work and unsettled claims.

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

« »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

« »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

~~*(Insert any other conditions for release of retainage upon Substantial Completion.)*~~Retainage shall be invoiced and paid upon Final Completion of the Contractor's Work, less such amounts as are attributable to 150% of the value of incomplete work and unsettled claims.

« »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

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§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1

Final payment, constituting the entire unpaid balance of the Contract Sum minus disputed sums and authorized deductions, shall be made by the Owner to the Contractor thirty (30) days after all of the following conditions have been satisfied:

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12.2.2 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 The Contractor has completed all Punch List items to the satisfaction of the Construction Manager, Architect and Owner;

.3 a final Certificate for Payment has been issued by the Architect;

.4 The Contractor has delivered all closeout Documentation required under the Contractor Documents, which include

i. one original final release of claims from Contractor (AIA G706 and G706A);

ii. operation and maintenance instructions/manuals;

iii. marked-up as-built drawings;

iv. standard and extended warranties from every subcontractor;

v. list of names, addresses and telephone numbers for all subcontractors and others providing guarantees and warranties;

vi. one original of final certified payrolls from Contractor and all lower tiered subcontractors;

vii. original affidavit of compliance with prevailing wage laws from Contractor and all lower tiered subcontractors;

viii. Testing and balancing reports, reviewed and approved by the Architect;

ix. any other closeout documents reasonably required by the Owner;

.5 the Contractor can provide proof that surveyed utility as-builts required by project documents have been accepted by AHJ's;

.6 the applicable governmental authorities have released to the Owner any escrows or deposits held for the restoration of the site, for stormwater or water quality measures, or for other Work that falls under this Contractor's scope; and

.7 the applicable governmental authorities have issued to the Owner the final use and occupancy permit for the Project.

.8 The Contractor has provided proof of continuing insurance as required by the Contract;

~~.Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when~~

~~.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and~~

~~.2 a final Certificate for Payment has been issued by the Architect.~~

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§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

« »

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

« » 0% « »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »
« »
« »
« »

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[~~« »~~] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[~~« »~~ X] Litigation in a court of competent jurisdiction

[« »] Other *(Specify)*

« »

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 ~~If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:~~
~~(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)~~

« »Not Used

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

Mr. Chris Krueger, PE
Director of Public Services
City of Kirkwood
139 S. Kirkwood Rd
Kirkwood, MO 63122
kruegeca@kirkwoodmo.org
314-822-5820
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§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

« »
« »
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« »

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents. All insurance policies shall include an ISO Additional Insured Endorsement listing the Owner and the Owner's Representative as additional insureds on a primary basis with Owner and Owner's Representative insurance excess and not contributory. General Liability and Auto policies shall contain a waiver of subrogation in favor of the Owner and its officers, directors and employees. Insurance company shall provide thirty (30) days' written notice prior to modification or cancellation of such insurance.

§ 8.5.2 Minimum Coverages
The minimum coverage for the insurance referred to herein shall be in accordance with the requirements established below. Contractor is required to maintain in effect all insurance described herein:

A. The Contractor shall carry and furnish evidence to the Owner that, with respect to the Work Contractor shall performs, Contractor carries Workers' Compensation Insurance and Employer's Liability, or is qualified as self-insured, under the provisions of the laws of Missouri relating to Workers' Compensation. Limits for Employer's Liability Insurance shall not be less than $1,000,000 or more if required by Statute. .

B. The Contractor shall carry and furnish evidence to the Owner that, Contractor has:
Commercial General Liability Insurance providing for a limit of not less than $2,000,000 combined single limit for all damages arising out of bodily injury, death or property damage, and shall specifically include insurance for Contractor's indemnification obligations in the Contract Documents.

A. $1,000,000 per occurrence for Products and Completed Operations Aggregate with the completed operations liability coverage remaining in effect for three years after the date of completion of the Work.

$1,000,000 per occurrence for Personal Injury and Advertising Injury Liability

Policy requirements shall be such that insurance provided in compliance with the Commercial General Liability Insurance shall cover liability of the Contractor for damage because of bodily injury to or death of persons and injury to or destruction of property which may be suffered by persons other than their own employees as a result of the negligence of the Contractor in performing the work covered by their Contract.
Policy requirements shall also be such that insurance provided in compliance with Commercial General Liability Insurance shall include coverage for special hazards such as the operation of material hoists, blasting, or other use of explosives, collapse of support to any building or structure, damage to underground property, motor vehicles, and all equipment used in construction of the improvements. Special hazard insurance shall only be provided if applicable. If any part of the Work is subcontracted, similar insurance shall be provided by or on behalf of the Subcontractor to cover their operations.

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C. The Contractor shall furnish evidence to the City of Kirkwood that, the Commercial General Liability Insurance include Business Automobile Liability Insurance providing for a limit of not less than $2,000,000 combined single limit for all damages arising out of bodily injury, death or property damage.

Policy requirements shall be such that insurance provided in compliance with the Business Automobile Liability Insurance shall cover the liability for all owned and non-owned automobiles, trucks and trailers.

D. The Contractor shall furnish evidence to the City of Kirkwood that, with respect to the operations performed by Subcontractors, such Subcontractors carry on their own behalf the same types and coverage of Commercial General Liability and Business Automobile Liability Insurance providing for a limit of not less than $2,000,000 combined single limit for all damages arising out of bodily injury, death or property damage. Each Subcontractor must also furnish evidence of Workers' Compensation Insurance as outlined in subparagraph (A).

E. Scope of Insurance and Special Hazards: The insurance required under subparagraphs A, B and C hereof shall provide the required protection for the Contractor and its Subcontractors, respectively, against damage claims which may arise from operations under the Contract Documents, whether such operations be by the insured or by anyone directly or indirectly employed by him, and also against any of the special hazards which may be encountered in the performance of the Contract Documents. The insurance provided will also name the City of Kirkwood as additional insured under the Contractor's insurance policies as respects work done for the City of Kirkwood by such Contractor under the Contract Documents.

F. Builder's Risk Insurance (Fire and Extended Coverage): Until the Project is completed and accepted by the City of Kirkwood, the Contractor is required to maintain Builder's Risk Insurance (fire and extended coverage) on one hundred percent (100%) completed value basis on the insurable portion of the project for the benefit of the City of Kirkwood, the Contractor and subcontractors as their interests may appear. All Risk" shall include, but not be limited to, the perils of Fire, Extended Coverage, Vandalism and Malicious Mischief, Terrorism, Theft, Collapse, Flood, Water, Steam or Fluid, Wind, Hail, Named Storm, Transit, Off-Site Storage, Installation and Rigging. The policy shall include coverage for materials and equipment, including any material and equipment supplied by Owner, while under the care, custody and control of Contractor during the course of Work. Any co-insurance penalties or deductibles shall be the responsibility of Contractor. The Builder's Risk Insurance shall allow partial use and occupancy and shall continue until Substantial Completion. Owner and Contractor shall waive all rights of subrogation between the other and the Builder's Risk policy shall permit such waiver between the parties. This waiver of subrogation shall also apply to any existing real and personal property of Owner adjacent or adjoining the Work. Owner and Contractor waive all rights against each other and their respective employees, agents, suppliers, subcontractors and sub-Subcontractors for damages caused by risks covered by the Builder's Risk

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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Insurance except for such rights as they may have to the proceeds of the insurance. This provision shall not release the Contractor from his obligation to complete, according to the plans and specifications, the project covered by the Contract, and the Contractor and his surety shall be obligated to full performance of the Contractor's undertaking.

G. Umbrella Coverage. Contractor shall also maintain throughout the Project umbrella/excessive coverage insurance in an amount of no less than $5,000,000.00.

H. Proof of Insurance: The Contractor shall furnish the City of Kirkwood with certificates and endorsement as may be required by Owner showing the type, amount, class of operations covered, effective dates and expiration date of policies. Such certificates shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered, except after thirty (30) days written notice has been received by the City of Kirkwood". This certificate must be received by the City of Kirkwood prior to any work beginning. Insurance certificates to be provided to the City shall name the City of Kirkwood as an "additional insured party" under the scope of this Contract.

§ 8.5.2.1 Subcontractors

The Contractor shall require all Subcontractors to procure and maintain all insurance required in this section and in like amounts and shall provide evidence of such insurance, with the following exceptions:

a. Subcontractors are not required to provide All-Risk Builders Risk Insurance;

b. Subcontractors with an initial contract amount less than $100,000.00 may provide liability coverage limits of $1,000,000.00 in addition to a $1,000,000.00 umbrella policy;

c. Subcontractors need not carry OCPL coverage if contractor's coverage is inclusive;

d. The Contractor and/or Subcontractor shall furnish the Owner prior to beginning any work satisfactory proof of carriage of all the insurance required by this Contract, with the provision that policies shall not be canceled, modified or non-renewed without thirty (30) days written notice to the Owner.

~~**§ 8.5.2** The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.~~

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Other provisions:

§8.7.1 Tax Exemption: The Owner intends to use the tax exempt purchase procedure authorized by Section 144.062 MoRS.

« »§8.7.2 Prevailing Wage: Not less than the prevailing hourly rate of wages, as set out in the wage order attached to and made part of the specification for work under the contract, shall be paid to all workers performing work under this contract. The Contractor will forfeit a penalty to the contracting public body of $100 per day (or portion of a day) for each worker that is paid less than the prevailing wage rate for any work done under the contract by the Contractor or by any subcontractor. The Contractor and all subcontractors to the contract must require all on-site employees to complete the ten-hour construction safety training program required under Section 292.675, RSMo, unless they have previously completed the program and have documentation of having done so. The Contractor will forfeit a penalty to the contracting public body of $2500 plus an additional $100 for each employee by the Contractor or subcontractor, for each calendar day, or portion thereof, such employee is employeed without the required training.

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§8.7.3 Certified Payroll: The Contractor and each Subcontractor shall submit, monthly, certified payroll for each week from the start of their Work through the completion of their Work. Refer to Missouri Department of Labor – Contractor Check-off List and Instructions Sheet for Contractor Payroll Records.

§8.7.4 Permits: Owner shall ~~pay for~~waive the fee of the building permit and fire permit. Contractor shall pick up the building and fire permits. Contractor shall obtain and pay for all other permits, licenses and approvals as applicable to the Contractor's Work.

§8.7.5 Equal Employment Opportunity:

A. During performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor will take positive action to insure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertisement; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the requirements of these nondiscrimination provisions.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.
3. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice advising the labor union or worker's representative of the Contractor's equal opportunity commitments, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. In the event of the Contractor's non-compliance with the Equal Opportunity conditions of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part.
5. The Contractor will include all of clauses 1 through 4 inclusive in every subcontract or purchase order, so that such provisions will be binding upon each subcontractor or vendor.

B. Exemptions to the above Equal Opportunity Conditions are construction contracts and subcontracts not exceeding $10,000.

C. Unless otherwise provided, the above Equal Opportunity provisions are required to be inserted in subcontracts at the site of construction.

D. Certification of Nonsegregated Facilities - Bidders are cautioned as follows: By signing this bid or offer, the bidder will be deemed to have signed and agreed to the provisions of the "Certification of Nonsegregated Facilities" in this solicitation. The certification provides that the bidder does not maintain or provide for his employees facilities which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis. The certification also provides that he will not maintain such segregated facilities. Failure of a bidder to agree to the Certification of Nonsegregated Facilities will render his bid or offer non-responsive to the terms of solicitations involving award of contracts exceeding $10,000.

E. Contractor hereby represents, warrants and certifies that Contractor, its subcontractors, or any of the employees of either are not currently engaged in, and shall not for the duration of the Contract engage in, a boycott of goods or services from: the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the State of Israel; or, persons or entities doing business in the State of Israel. This certification shall be interpreted consistent and in conformity with the Missouri Anti-Discrimination Against Israel Act, 34.600 Revised Statutes of Missouri.

§8.7.6 Domestic Procurement Act: xxx

§8.7.7 Consequential Damages: Contractor waives all claims for consequential damages against the Owner and Construction Manager arising out of this Agreement and/or the performance of the Owner's obligations thereunder.

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ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor

.2 ~~AIA Document A101™–2017, Exhibit A, Insurance and Bonds~~Not Used

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

.4 ~~AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:~~

~~(Insert the date of the E203-2013 incorporated into this Agreement.)~~

.5 Exhibit B: Bid Proposal Form and Bid Bond

.6 Exhibit C: Supplemental Bid Information Form

.7 Exhibit D: Bid Scope of Work

.8 Exhibit E: Change Order Calculations

.9 Exhibit F: Contract Document Log (Drawings, Specifications and Front Ends)

« »

.5 ~~Drawings~~

~~Number~~	~~Title~~	~~Date~~

.6 ~~Specifications~~

~~Section~~	~~Title~~	~~Date~~	~~Pages~~

.7 ~~Addenda, if any:~~

~~Number~~	~~Date~~	~~Pages~~

~~Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.~~

.8 ~~Other Exhibits:~~

~~(Check all boxes that apply and include appropriate information identifying the exhibit where required.)~~

~~[« »] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:~~

~~(Insert the date of the E204-2017 incorporated into this Agreement.)~~

~~« »~~

~~[« »] The Sustainability Plan:~~

~~Title~~	~~Date~~	~~Pages~~

~~[« »] Supplementary and other Conditions of the Contract:~~

~~Document~~	~~Title~~	~~Date~~	~~Pa~~

.9 ~~Other documents, if any, listed below:~~

~~(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal~~

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~~requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)~~

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This Agreement entered into as of the day and year first written above.

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
« »« »	« »« »
(Printed name and title)	*(Printed name and title)*

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AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Kirkwood New Public Works Facility545 Leffingwell Ave.
Kirkwood MO 63122

THE OWNER:
(Name, legal status and address)

City of Kirkwood MO139 South Kirkwood Road
Kirkwood, Missouri 63122
THE ARCHITECT:
(Name, legal status and address)

Archimages143 West Clinton Place
St. Louis, Missouri 63122
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Acceptance of

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The Construction Manager for the Project shall be Navigate Building Solutions ("Navigate"). All communications between Contractor and Owner shall be through Navigate on behalf of Owner. Navigate has the authority to take all actions on behalf of the Owner permitted by the Contract Documents, with the sole exception of agreeing to any Modifications to the Contract. Only the Owner's representatives, David Weidler Assistant Chief Administrative Officer or Chris Krueger, Director of Public Services , have the authority on behalf of the Owner to agree to any Change Order and/or to otherwise agree to authorize any Modifications, with it being understood and agreed that any Modifications to the Contract must be executed by David Weidler Assistant Chief Administrative Officer or Chris Krueger, Director of Public Services on behalf of the Owner in order to be effective.

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

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§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.9 Float

Float is a measurement of time indicating how late any activity or group of activities in a schedule can be completed without impacting the critical path and the scheduled end date of the Project. Float belongs to the Project and is not for exclusive use of the Contractor and is not intended to be used for non-excused delays identified in 8.3.1.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.4.1 In the event of discrepancies or conflicts among or between the Contract Documents or observable conditions exist, the Contractor shall request an interpretation in writing from the Owner and Architect before proceeding with the Work. If the Contractor fails to request such interpretation from the Architect, it is presumed that the more stringent, better quality or higher quality requirement is included in the Work. The Contractor shall be responsible for the cost and installation of such requirement at no additional cost to the Owner. Before ordering any materials or doing any Work, the Contractor shall verify measurements at the Project site and shall be responsible for correctness of such measurements. Any difference which may be found shall be submitted to the Architect for interpretation before proceeding with the Work as a condition precedent to any claim for an increase in the Contract Sum. If conflict among various provisions of the Contract Documents is found, and the quality or stringency of the conflicts are not in question, the terms shall be interpreted in the following order of priority:

.1 Modifications to the Contract
.2 The Contract
.3 Special Conditions
.4 General Conditions

Specifications shall control over Drawings, and details in drawings shall control over large-scale drawings.

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§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The drawings, specifications, and other instruments of service are owned by the Owner. The Contractor, Subcontractors, Sub- subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Owner's reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

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§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15. In lieu of correcting defective Work, the Owner may in its discretion decide to accept such defective Work and backcharge the Contractor a reasonable amount equivalent to what it would have cost to replace the defective Work.

§ 2.6 Architect's and Construction Manager's Compensation for Services to Remedy Defective Work

When the Architect's and Construction Manager's additional services are required because of defective work, neglect, failure, deficiencies, or default by the Contractor, the Contractor shall be responsible to the Owner for the cost of such additional services.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

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§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 If the Contractor performs any Work involving an apparent error, inconsistency, ambiguity, construction impracticality, omission or code violation in the Contract Documents of which the Contractor is aware, or which could reasonably have been discovered by the review required by Section 3.2, without prompt written notice to the Owner and the Architect and request for correction, clarification or additional information, as appropriate, the Contractor does so at its own risk and expense and all claims relating thereafter are specifically waived.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

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§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum

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or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

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§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect. The Contractor must correct at its cost, and without any adjustment to Contract Time, any Work the correction of which is required due to the Contractor's failure to obtain approval of a submittal required to have been obtained prior to proceeding with the Work, including but not limited to, correction of any conflicts in the Work resulting from such failure.

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§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste

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materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will

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not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

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§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect.

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Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

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§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- **.1** The change in the Work;
- **.2** The amount of the adjustment, if any, in the Contract Sum; and
- **.3** The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 The Contractor must submit change proposals covering a contemplated Change Order within ten (10) work days after the request of the Owner, Architect or Construction Manager or within ten (10) work days of the event giving rise to the Contractor's claim for a change in the Contract Sum or Contract Time. No increase in the Contract Sum or extension of the Contract Time will be allowed the Contractor for the cost or time involved in making change proposals. Change proposals will define or confirm in detail the Work that is proposed to be added, deleted,

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or changed and must include any adjustment which the Contractor believes to be necessary in the Contract Sum or the Contract Time. Any proposed adjustment must include detailed documentation, including but not limited to: cost, properly itemized and supported by sufficient substantiating data to permit evaluation including cost of labor, materials, supplies and equipment, rental cost of machinery and equipment, and additional bond cost. Change proposals will be binding upon the Contractor and may be accepted or rejected by the Owner in its discretion. The Owner may, at its option, instruct the Contractor to proceed with the Work involved in the Change Proposal in accordance with this Section 7.2.2 without accepting the Change Proposal in its entirety. See Exhibit E, entitled Change Order Calculations which shall govern and apply to Change Orders. A Change Order is not effective until the Owner and Architect issue and sign the Change Order.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly. The Construction Manager shall be kept informed and will consult with the Architect throughout the process described in Section 7.3.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- **.1** Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- **.2** Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- **.3** Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- **.4** Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- **.5** Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

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§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.2.4 If at any time during the course of the Work, the Owner reasonably determines that the Contractor has fallen behind the critical path of the schedule, the Owner may upon written notice to the Contractor, require the Contractor to recover schedule by any means appropriate (including but not limited to the provision of extra shifts and/or overtime and/or adjustments to the schedule). Within five days of the Contractor's receipt of such written notice, the Contractor shall provide the Owner with a written recovery plan and shall commence recovery efforts. So long as

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the Contractor has fallen behind schedule for reasons attributable to the Contractor (and not to force majeure events), all costs associated with the recovery schedule shall be borne by the Contractor. If, however, the Contractor is not at fault for the delay in the work (due to force majeure events or other causes that would otherwise entitle the Contractor to an extension of Contract Time) then the Contractor shall be paid for the costs of recovering schedule pursuant to the provisions of the Contract Documents applicable to changes in the Work.

§ 8.2.5 The Contractor must conform to the most recently approved Construction Schedule. The Contractor must complete the indicated work or achieve the required percentage of completion, as applicable, with any interim completion dates established in the most recently approved Construction Schedule.

§ 8.2.6 The Contractor must maintain at the Site, available to the Owner, Construction Manager and Architect for their reference during the progress of the Work, a copy of the approved Construction Schedule and any approved revisions thereto. The Contractor must keep current records of and mark on a copy of the approved Construction Schedule the actual commencement date, progress, and completion date of each scheduled activity on the Construction Schedule.

§ 8.2.7 The Contractor represents that its bid includes all costs, overhead and profit which may be incurred throughout the Contract Time and the period between Substantial and Final Completion. Accordingly, the Contractor may not make any claim for delay damages based in whole or in part on the premise that the Contractor would have completed the Work prior to the expiration of the Contract Time but for any claimed delay.

§ 8.2.8 The Owner reserves the right to issue written directive to accelerate the Work that may be subject to an appropriate adjustment, if any, in the Contract Sum. Contractor must substantiate any costs associated with such Owner directive.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Critical Path Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine. The sole remedy for delays other than those which are caused solely and exclusively by acts or omissions of the Owner (except actions taken by the Owner acting as a regulatory authority to protect the public health or safety or to conform to law).will be non-compensable time extensions for completion of the Work.

§ 8.3.1.1 Tariffs: It is expressly agreed that in establishing the Contract Sum, the contractor has given consideration to the risks associated with tariffs, including the possibility that tariffs may be newly enacted after execution of the Agreement, and/or that existing tariffs may change after execution of the Agreement. Contractor expressly accepts all risks associated with new or changing tariffs, and agrees that it will make no claim against the Owner related in any way to new or changing tariffs.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect and Construction Manager before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form,

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and supported by the data to substantiate its accuracy, required by the Architect and Construction Manager. This schedule, unless objected to by the Architect or Construction Manager, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and Construction Manager and supported by such data to substantiate its accuracy as the Architect and Construction Manager may require, and unless objected to by the Architect or Construction Manager, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect and Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect or Construction Manager require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to

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payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

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§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

The Contractor has no right to stop Work as a consequence of non-payment. In the event of any disagreement between the Contractor and Owner involving the Contractor's entitlement to payment, the Contractor's only remedy is to file a Claim in accordance with Article 15. The Contractor must diligently proceed with the Work pending resolution of the Claim. If, however, an Application for Payment has been certified by the Architect, and the Owner fails to make payment within sixty (60) days of Architect's certification, the Contractor may upon ten (10) days' written notice to the Owner, stop work if payment is not made by the Owner within ten (10) days following the notice.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use , and the remaining outstanding work is considered minor. The Project will not be considered complete before, at a minimum, the AHJ's have given written approval for the Owner to occupy the premises.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

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§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate..

§ 9.8.6 Unless otherwise provided in the Certificate for Substantial Completion, the Contractor must complete or correct all items included in the final Punch List within thirty (30) days after the Date of Substantial Completion.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If

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the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- **.3** other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

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§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

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ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other, (2) the Architect and Architect's consultants, and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount

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allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition.. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

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§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

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§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

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§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's and Construction Manager's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to

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the other party and to the Initial Decision Maker with a copy sent to the Architect and the Construction Manager, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 10 calendar days after occurrence of the event giving rise to such Claim or within 10 calendar days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

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§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 The parties shall endeavor to resolve by mediation any Claims, dispute, or other matter in question or arising out of or related to the Contract. The parties shall share the mediator's fee and any filing fees equally. The parties will bear their own attorneys' fees, expert witnesses' fees, costs and expenses in the mediation. The mediator shall be an attorney selected by the parties from the United States Arbitration and Mediation (USA&M), and the mediation shall be held at USA&M's offices in St. Louis, Missouri, at a time and date to be decided, unless another mediator or location mutually agreed upon. Mediation is not a condition precedent to commencing litigation, but if litigation is commenced before mediation is held, the Parties agree to mediate before any dispositive motions or trial.

§ 15.3.2 If the parties do not resolve the disputes through meditation pursuant to Section 15.3.1, the method of binding dispute resolution shall be litigation in the Circuit Court for St. Louis County, Missouri.

ARTICLE16 REGULATIONS

§ 16.1 Contractor's Responsibilities

§ 16.1.1 The Contractor shall assume all responsibility and costs in complying with Federal, State and Local regulations for Equal Opportunity Employment, Anti-Discrimination, Safety and other Regulations.

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SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

A. These Supplementary Conditions amend, supplement General Conditions delineated within 00 72 00 A.I.A. General Conditions of the Contract for Construction and all other provisions of Contract Documents, as delineated below. Those provisions that are not so amended or supplemented shall remain in full force, effect.

B. The terms used within these Supplementary Conditions, that are defined within the General Conditions, shall have their meanings assigned to them, within same.

1.02 MODIFICATIONS to GENERAL CONDITIONS

A. ARTICLE 1.1 - GENERAL PROVISIONS
   1. Amend section 1.1.1 to include:
      a. Contract Documents, which comprise the entire agreement between Owner and Contractor, shall also include;
         1) AIA 101-2017 and AIA 201-2017.
         2) Supplementary Conditions (this document).
         3) Bid Form and Bid Bond.
         4) Contractor's Affidavit for Public Construction Projects.
         5) Non Collusion Affidavit.
         6) Missouri Annual Wage Order No. 32.
         7) All previously issued Addenda and all modifications, following execution of Contract.
      b. Documents listed above, together with this Agreement, shall form the Contract and are as fully a part of said Contract, as if attached to this Agreement or repeated herein.

B. ARTICLE 2.3 - INFORMATION and SERVICES REQUIRED of the OWNER
   1. Delete section 2.2.6 and substitute the following;
      a. 2.2.6: Owner shall furnish Contractor no printed copies of Contract Documents. Contractor may purchase copies at their own cost. Digital copies shall be made available at no cost.

C. ARTICLE 3.2 - REVIEW OF CONTRACT DOCUMENTS AND EXISTING FIELD CONDITIONS by CONTRACTOR
   1. Add the following;
      a. 3.2.5: Owner shall be entitled to reimbursement from Contractor, for all amounts paid to Architect, for evaluating and responding to any Contractor's requests for information, that are not prepared in accordance Contract Documents, or where the requested information is available from a careful study and comparison of said Contract Documents, field conditions, other Owner provided information, Contractor Prepared coordination drawings or prior Project correspondence, documentation.

D. ARTICLE 3.4 - LABOR and MATERIALS

1. Add Section 3.4.2.1 to Section 3.4.2:

   3.4.2.1: After Contract has been executed, Owner and Architect will consider Requests for Substitution of Products in place of those specified only under the conditions set forth within General Requirements (Division 01 of the Specifications). By making any Request for Substitution, Contractor;

   .1 Represents that they have personally, previously investigated proposed substitute Product and determined that it is equal or superior, in all respects to specified Product.

   .2 Represents that they will provide identical Warranty for said substitution, as would have been provided for Specified Product.

   .3 Certifies all cost data presented is complete and includes all related costs for said substituted product and for Work that must be changed as a result of the substitution, except any Architect's redesign costs and waives all claims for any additional costs, related to substitution, that subsequently become apparent and

   .4 Shall coordinate entire installation of previously accepted substitute, making all changes, as may be required for Work to be complete in all respects.

2. Add the following to the end of Section 3.4.2;

   3.4.2.2: Owner shall be entitled to reimbursement from Contractor for all amounts paid to Architect for reviewing Contractor's proposed substitutions and making agreed upon changes within Contract Documents, resulting from said substitutions.

3. Add the following to the end of Section 3.4.3;

   a. 3.4.3.1: Contractor, all Sub Contractors, Sub-Sub Contractors shall provide sworn affidavit and verification that they are registered within the U.S. Citizenship and Immigration Services E-Verify service and have records of all employees working on this particular Existing Project Site. Contractor shall provide said records to Owner.

   b. 3.4.3.2: All construction employees intending to work on this particular Project Site shall complete an OSHA 10 Hour Training Course, before their Scope of Work begins. Contractor’s Site Superintendent shall keep a three ring binder including the names and photocopies of all Certificates.

   c. 3.4.3.3: Contractor shall, at all times, employ sufficient labor and equipment for prosecuting said Work, through full completion, in manner and time required by Contract Documents. All laborers shall have sufficient skills and experience, as required to properly perform any Work assigned.

E. ARTICLE 3.6 - TAXES

1. **Owner is Tax Exempt, Not For Profit.** Obtain all appropriate paperwork from Owner, as required to document this exemption.

F. ARTICLE 3.9 - SUPERINTENDENT

1. Add Section 3.9.1.1 to Section 3.9.1;

   a. Contractror’s Existing Project Site Superintendent shall be an exclusively non physical labor type Superintendent, who shall be responsible for the satisfactory progression of all Work and shall ensure that same is being completed in full accordance with Contract Documents. This Superintendent shall be satisfactory to Architect, Owner and shall not be changed, except with prior consent of both. Superintendent shall also relay any conflicts, discrepancies within Contract Documents, to Architect, for interpretation, resolution.

G. ARTICLE 3.12 - SHOP DRAWINGS, PRODUCT DATA and PRODUCT SAMPLES

1. Add the following section:

3.12.11: Architect's review of Contractor's Submittals, shall be limited to examination of (1) One Initial Submittal and (1) One Resubmittal, only. Owner shall be entitled to obtain reimbursement from Contractor, for all amounts paid to Architect, relating to the evaluation of any additional Documents.

H. ARTICLE 4.2 - ARCHITECT'S ADMINISTRATION of CONTRACT

1. Add the following section;

4.2.2.1: Owner shall be entitled to reimbursement from Contractor for all amounts paid to Architect, for Existing Project Site visits made necessary, through fault Contractor or by defects, deficiencies within any Work.

I. ARTICLE 7 - CHANGES IN THE WORK

1. Add the following Section 7.1.4 to Section 7.1;

7.1.4: Combined overhead and profit included within total cost to Owner for any particular Change in Work, shall be based upon the following schedule:

.1 For the Contractor, Work performed by Contractor's own forces, (10) Ten percent of cost.

.2 For the Contractor, Work performed by Contractor's Subcontractors, (5) Five percent of cost due Subcontractors.

.3 For the Subcontractor, Work performed by that Subcontractors own forces, (10) Ten percent of cost.

.4 For each Subcontractor involved, Work performed by Subcontractor's Sub Subcontractors, (5) Five percent of cost due Sub Subcontractor.

.5 Cost to which overhead and profit shall be applied will be determined in full accordance with Section 7.3.7.

.6 In order to facilitate checking of quotations, for all extras or credits, all proposals, shall be accompanied by a complete, thoroughly detailed itemization of all costs, including labor, materials and Subcontracts. All labor and materials shall be itemized, within manner delineated above. Where major cost items are Subcontracts, they shall also be itemized. In no case, shall any change greater than Three Hundred $300.00 be approved without such itemization.

J. ARTICLE 9.11 - LIQUIDATED DAMAGES (add)

1. Add the following Section 9.11.1;

a. In the event Substantial Completion, any aspect of Scope of Work is not achieved within time previously specified, Contractor shall pay Owner, per Existing Project Site, liquidated damages in the amount of One Thousand ($1,000.00) dollars, per calendar day, (no cap), until entire, previously established Project Substantial Completion has been achieved. All Parties acknowledge, agree that all provisions of Section 8.3, AIA A201-2017 General Conditions of the Contract for Construction, entered into by said parties and all other provisions of Contract Documents, relating to justified delays or extensions of time, shall not preclude any payment, recovery of liquidated damages required, pursuant to Section 3.3, AIA A101-2017 Standard Form of Agreement Between Owner and Contractor. The above provisions calling for payment of liquidated damages are provided herein, in light of difficulty of determining the amount of damages which may result to Owner from Contractor's failure to achieve entire Project Substantial Completion upon or before previously specified time. All Parties agree liquidated damages set forth above, are reasonable, based upon facts, circumstances of said parties, at time of entering into Agreement and with due regard to any future expectations.

Payment of any liquidated damages to Owner shall not be construed as a release or waiver by Owner, of the right to prevent any delays, within entire, previously established Project Substantial Completion date.

2. Add the following Section 9.11.1;
    a. In the event entire Project Substantial Completion is achieved earlier than previously specified, Owner shall pay Contractor, where entire Project Substantial Completion is achieved early, an incentive amount of One Thousand ($1,000.00) dollars, per calendar day (excluding all weekends, holidays), maximum (3) Three days total, if entire Project Substantial Completion is in fact, achieved before previously established Project Substantial Completion date.

K. ARTICLE 10 - PROTECTION OF PERSONS and PROPERTY
1. Add the following Section 10.2.3.1 and10.2.3.2 to Section 10.2.3;
    a. 10.2.3.1: During progression of Work, Contractor shall protect all Work from any injury, defacement, damage and particular care shall be taken of all finished portions. Any damage occurring, from any cause, including any damage caused by others and utilities, shall be properly replaced at Contractor’s expense, to the satisfaction of Architect and Owner's representative.
    b. 10.2.3.2: Contractor shall also be responsible for any repairs or maintenance required within Existing Project Site, from Notice to Proceed Date until final acceptance of Work by Architect, Owner. Said maintenance issues shall include, but shall not be limited to, pothole repair, resurfacing of roads, maintenance of utility cuts, thorough pavement cleaning and mowing.

L. ARTICLE 11 - INSURANCE and BONDS
1. Add the following Sections 11.1.1.1 through 11.1.1.4 to Section 11.1.1;
    11.1.1.1 Limits for Worker's Compensation and Employers' Liability insurance shall meet all statutory limits mandated by each State, Federal Law.
    11.1.1.2 Limits for Commercial General Liability Insurance, including coverage for all Premises Operations, Independent Contractors' Protective, Products Completed Operations, Contractual Liability, Personal Injury and or Broad Form Property Damage, (including coverage for Explosion, Collapse any Underground hazards) shall be as follows:
        $1,000,000.00 Each Occurrence
        $2,000,000.00 General Aggregate
        $1,000,000.00 Personal and Advertising Injury
        $2,000,000.00 Products Completed Operations Aggregate
        .1 Policy shall be endorsed, as required to have General Aggregate apply to this particular Project only.
        .2 Contractual Liability Insurance shall include coverage as sufficient to meet those obligations delineated within AIA Document A201-2017, under Section 3.18.
        .3 All Products, Completed Operations Insurance shall be maintained for a minimum period of (5) Five years, following expiration of period for correction of said Work.
    11.1.1.3 Automobile Liability insurance (all owned, non owned and hired vehicles) for bodily injury and property damage: $1,000,000.00 Each Accident
    11.1.1.4 Contractor shall, at Contractor's own expense, provide Insurance coverage for all materials stored off the Existing Project Site, following written approval by Architect, Owner, at previously established value and for any portions of Work in transit or within Existing Project Site.

2. Add the following Section 11.2.2.1 to Section 11.2.2;

11.2.2.1 Insurance required by Section 11.2 is not intended to cover any machinery, tools or equipment owned or rented by Contractor, that are utilized within the performance of said Work, but not incorporated into any permanent improvements. Contractor shall, at Contractor's own expense, provide Insurance coverage for any owned or rented machinery, tools or equipment, which shall be subject to those provisions set forth within Section 11.3.

M. 11.1.2.1 PERFORMANCE and PAYMENT BOND

1. Add Section 11.1.2.1 to Section 11.1.2;

11.1.2.1 Contractor shall furnish bonds covering faithful performance of Contract and payment of all obligations arising thereunder. Bonds may be obtained through Contractor's usual source and cost thereof shall be included within said Contract Sum. Amount of each bond shall be equal to 100% of Contract Sum.

11.1.2.2 Contractor shall deliver all required bonds to Owner no later than (3) Three calendar days, following issue Date of Agreement. Contractor shall, prior to commencement of any Work, submit evidence, satisfactory to Architect, Owner, all bonds shall be furnished.

11.1.2.3. Contractor shall require attorney in fact, who executes required Bonds on behalf of surety, to affix thereto a certified and current copy of said power of attorney.

N. ARTICLE 13 MISCELLANEOUS PROVISIONS

1. Add the following Section 13.6;
   a. 13.6: Truck and Traffic Restrictions:
      1) 13.6.2: Traffic Control shall include multiple Persons, as necessary to Stop all traffic and advance warning signage clearly indicating construction vehicles are entering and leaving this particular Existing Project Site.
2. Add the following Section 13.7
   a. 13.7 Firearms;
      1) 13.7.1: Owner expressly prohibits any induvial from bringing any firearms onto their Property, this particular Existing Project Site.

PART 2 PRODUCTS – "NOT APPLICABLE"…

PART 3 EXECUTION – "NOT APPLICABLE"…

END OF SECTION

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SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Kirkwood Public Works Renovation

B. Owner's Name: City of Kirkwood, Missouri

C. Owner's Representative:
   1. Chris Krueger, P.E., Director of Public Works

D. Architect's Name: Archimages, Inc.

E. Architect's Representative:
   1. Ette Udo, Project Manager

F. Project shall consist of New Construciton and Renovation within an Existing Project Site.

1.02 CONTRACT DESCRIPTION

A. Contract Type: Single Prime Contract, Standard Form of Agreement, where bsis of Payment is a Stipulated Sum.

B. The work of each separate prime contract is identified in this section and on Drawings.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of Work as delineated within Contract Documents.

1.04 WORK BY OWNER

A. Those items noted NIC (Not in Contract) shall be provided, installed by Others.

1.05 OWNER OCCUPANCY

A. Owner intends to occupy Project immediately upon previously established Project Substantial Completion Date.

B. Owner intends to occupy select portions of Project, prior to previously established Project Substantial Completion Date.

C. Fully cooperate, coordinate with Owner's Representative, as required to eliminate any conflicts and facilitate Owner's Business Operations.

D. Schedule, execute entire Project Scope of Work, as required to accommodate Owner occupancy of same.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations:
   1. Coordinate, conduct all Construction activities only in those ways that will limit disturbance to Existing Project Site.

B. Facilitate use of Existing Project Site as required to allow:
   1. Owner Occupancy.
   2. Work by Others.
   3. Use of Existing Project Site by General Public.

C. Provide access to and from Existing Project Site as required by Law, Owner and those Local Authorities having Jurisdiction.
   1. Emergency Building Exits, During Construction: Keep all exits required by code open during entire Construction period; provide temporary exit signs if any exit routes are temporarily altered.
   2. Do not obstruct any roadways, sidewalks or public ways.

D. Existing building environments may not be used.

E. Time Restrictions:

1. Limit any particularly loud, noisy Work to local hours of between 8:00 a.m. and 5:00 p.m.

F. Utility Outages and Shutdown:
   1. Limit all disruptions of any Utility Services to those hours Existing Project SIte is unoccupied.
   2. Do not disrupt or shut down any life safety systems, including but not limited to fire sprinklers and fire alarm system, without minimu (21) Twenty One Business Days notice to both Owner and those Local Authorities having Jurisdiction.
   3. Limit shutdown of any Utility Services to (3) Three hours at a time, arranged at minimum (10) Ten Business Days advance notice to Owner and those Local Authorities having Jurisdiction.
   4. Do not allow any accidental disruption of Utility Services to any other existing facilities.

1.07 WORK SEQUENCE

A. Entire Project Scope of Work shall be implemented within (1) One individual Phase, as indicated within Contract Documents

B. Coordinate Construction Schedule, including all Existing Project Site operations with Owner's Representative and Architect, prior to the commencement of any Work.

1.08 DESIGN BUILD WORK

A. Mechanical, Electrical, Plumbing, Fire Protection and Low Voltage Scope of Work aspects shall be provided on a design build basis. Drawings indicate basic locations of items and provide limited direction for design of systems. Contractor is required to provide services of Professional Engineers, licensed within that State in which this paticular Project i located, as required to complete entire Systems Design. Design process for said systems shall include coordination with the Architect, Engineers and thoroughly detailed Submittal of Design for review. Multiple design submittals, if necessary, will be requested, required by Arcitect, Owner.

1.09 SPECIFICATION SECTIONS APPLICABLE TO EVERY CONTRACT

A. Provisions of those Sections listed below shall apply to each Contract.

B. Section 01 20 00 - Price and Payment Procedures.

C. Section 01 30 00 - Administrative Requirements.

D. Section 01 40 00 - Quality Requirements.

E. Section 01 50 00 - Temporary Facilities and Controls.

F. Section 01 60 00 - Product Requirements.

G. Section 01 70 00 - Execution and Closeout Requirements.

H. Section 01 78 00 - Closeout Submittals.

1.10 CONTRACT CONSTRUCTION

A. Division 01 - General Requirements:
   1. Those Specification Sections listed above.
   2. Provide Construction Debris receptacles and remove all debris, refuse from Existing Project Site.
   3. Provide Erosion control structures as directed by Civil Engineer, Architect.
   4. Provide Temporary water control as directed by Civil Engineer, Architect.
   5. Provide thorough Final cleaning as directed by Architect, Owner's Representative.

B. Provide entitre Project Scope of Work.

PART 2 PRODUCTS-NOT APPLICABLE...

PART 3 EXECUTION-NOT APPLICABLE...

END OF SECTION

KIRKWOOD PUBLIC WORKS
PROJECT SCOPE DESCRIPTION

The project is on a 9 acre +/-site located at 545 Leffingwell Ave /516 S Elloit Ave Kirkwood MO 63122. It consists of an existing site improvements & utilities and existing 67,800 SF warehouse structure with an adjoining three story 5,200 SF per floor office building on the east face. Only 2 floors of the office building are currently built out. The 3rd floor will remain for future use space. There is also an existing 3,300 SF 1 story out-building. All three buildings along with the site will be repurposed for the Kirkwood Public Works Departments

Work in the warehouse will include primarily nonstructural demolition and new wall openings. Most light in the warehouse and office to remain with focused upgrades, new trench drains and new mechanical systems. Build out of new offices, break area and locker rooms and chain link fencing dividers. New lighting in the newly built-out areas. Electrical system upgrades with respect to distribution.

Work in the three-story office building will be minimal architectural changes to accommodate new office uses. The existing office building areas mechanical systems are existing to remain. Most lighting will remain with some minor additions. Finishes in office area will mostly remain.

Half of the outbuilding will be converted to a drive through wash bay and the other half to be a large storage area.

Site work will consist of an outdoor recycling area concrete pad and a salt dome

There will be bid alternates for a Police Dispatch center on the 3rd floor of the office building, storm shelter, a two-step alternate for an improved recycling center, roofing, painting the exterior and a few others

Preliminary project schedule is for construction to start May 2026 with a max duration of 12 months.

EN END OF SECTION

NAVIGATE
BUILDING SOLUTIONS

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KIRKWOOD PUBLIC WORKS
Owner Provided Scopes

The City of Kirkwood will provide several Owner furnished and Owner installed scopes in conjunction with the project. All Owner direct vendors **shall** be coordinated by the GC. Some scopes will have rough ins or other components installed by the GC. The Owner provided and GC portions of these scopes are listed below:

Fire Alarm – **Tech Electronics** shall be a direct vendor to the City of Kirkwood. They shall design, secure permit and install the fire alarm system. Their scope shall include cabling, furnish and installation of all detection and annunciation devices, head end equipment and programming. They shall also provide interface and interlocks with all other required systems.

The GC shall provide all conduits and boxes at locations indicated in the documents.

DAS – **Tech Electronics** shall be a direct vendor to the City of Kirkwood. They have performed a heat map test to determine the extent, or need for, a DAS system. Tech Electronics shall design, secure permit and install the DAS system. Tech's scope shall include cabling, furnish and installation of all devices.

The GC shall provide all conduits and boxes at locations indicated in the documents

Access Control – Murphy Co. shall be a direct vendor to the City of Kirkwood. They shall design, secure permit and install the access control system. Their scope shall include head end equipment and programming as well as final connection to electric door hardware after hardware is provided and installed by GC per the documents. Murphy Co.shall also provide interface and interlocks with any other required systems.

The GC shall provide all conduits, boxes, cabling and electric door hardware (furnish & install) at locations indicated in the documents. Murphy Co. will de-install, make connections, test and reinstall the electric door hardware.

Surveillance – Murphy Co. shall be a direct vendor to the City of Kirkwood. They shall design, secure permit and install the surveillance system. Their scope shall include cameras, camera mounts, head end equipment and programming. Murphy Co. shall also provide interface and interlocks with any other systems.

The GC shall provide all conduits, boxes and cabling. Cabling shall be tested, labeled and mapped.

Relocation of Owner equipment – Vendor(s) TBD. The City of Kirkwood will be responsible for the relocation of all fixed equipment, tool chests, tools, materials, trucks, trailers, construction equipment, furniture, files and employee desk items from their existing facility to the new facility.

There are a few specific exceptions that are indicated specifically in the documents

Data and Telco – The City of Kirkwood IT Department will relocate all computer, desk phones and head end equipment. All cabling (existing and new) shall be tested, labeled and mapped

Salt Dome – The City of Kirkwood will furnish and install the "LEGO" block portion of the salt dome. The GC will furnish and install the remainder of the scope. GC to coordinate with City.

A/V – The City of Kirkwood will furnish and install all A/V infrastructure and equipment.

Pavement Striping - The City of Kirkwood will perform all pavement striping interior and exterior.

Signage – GC shall be required to provide the minimum sign package required for occupancy. No monument sign. All other signage to be provided by the City of Kirkwood.

Materials Testing – The City of Kirkwood shall retain a third part testing agency to provide materials testing and all third part special inspections mandated by code. GC shall be responsible for coordinating testing agency.

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation, submittal of Applications for Progress Payments.

B. Documentation of Changes within Contract.

C. Correlation of Contractor Submittals, based upon previous changes.

D. Procedures for preparation, submittal of Application for Final Payment.

1.02 RELATED REQUIREMENTS

A. Section 00 52 00- Agreement Form Document.

B. Section 00 72 00 - General Conditions Document.

C. Section 00 73 00 - Supplementary Conditions.

D. Section 01 78 00 - Closeout Submittals.

1.03 SCHEDULE OF VALUES

A. Facilitate Schedule of Values Form.

B. Those Forms filled out by hand will not be accepted.

C. Submit Schedule of Values in PDF format no later than (15) Fifteen business days, following issue date of Owner Contractor Agreement..

D. Format: Utilize Table of Contents, this Project Manual.as required to accurately dentify each line item, with number and title corresponding to Specifications Section. Identify site mobilization and bonds and insurance.

E. Include within each line item, amount ofall Allowances identified within Contract Documents. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.

G. Revised Schedule shall list all previously approved Change Orders, within each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at those intervals stipulated within Agreement.

B. Use Form AIA G702 and Form AIA G703, edition as stipulated in Agreement.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

D. Forms filled out by hand will not be accepted.

E. For each item, provide a column for listing each of the following:
   1. Item Number.
   2. Description of work.
   3. Scheduled Values.
   4. Previous Applications.
   5. Work in Place and Stored Materials under this Application.
   6. Previously fully Executed Change Orders, only.
   7. Total Completed and Stored to Date, as of Application Date.
   8. Current, accurate Percentage, Construction Completion.
   9. Balance to Finish.
   10. Retainage.

F. Execute certification via dated, signature of authorized officer.

G. Use only that data from approved Schedule of Values. Provide dollar value within each column, for each line item of Work performed and any stored Building Materials.

H. List each peviously fully Executed Change Order, as separate line item, including Change Order Number and dollar amount, as for an original item of ork.

I. Submit each Application for Payment within PDF format.

J. Include following within each Application for Payment.
   1. Transmittal letter as identified within Section 01 30 00 Administrative Requirements.
   2. Detailed, dated Construction Progress Schedule, updated, current as delineated within Section 01 30 00 Administrative Requirements.
   3. Current Construction photographs as outlined within Section 01 30 00 Administrative Requirements.
   4. Partial Release of Liens from thoese Subcontractors, Vendors. corresponding to dollar amounts requested.
   5. Lien waivers.
   6. Project record documents as outlined within Section 01 78 00- Closeout Submittals.
   7. Affidavits attesting to all off Existing Projest Site Stored Builing Materials.
      a. This information must include photographs and accurately Dated Certificates of Insurance.

K. Whenever Architect requires substantiating information, submit data justifying all dollar amounts. Provide one copy data, including Cover Letter for each copy Submittal. Indicate Application Number, Date and Line Item via number and description.

1.05 MODIFICATION PROCEDURES

A. Submit detailed Contact Information for that individual authorized to receive change documents and who will be responsible for informing others within Contractor's employ, or Subcontractors of changes to Contract Documents.

B. For those changes, which advance pricing is desired, Archimages, Inc. will issue documentation including description of proposed changes with revised drawings. Contractor shall prepare and submit fixed price quotation within (10) Ten buiness days, issue date of Architect's documentation.

C. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
   1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
   2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
   3. For pre determined unit prices and quantities, the amount will based on the fixed unit prices.
   4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

D. Substantiation of Costs: Provide throughly detailed information, as required for Architect, Engineer's evaluation, review.
   1. Provide following data:
      a. Quantities of products, labor, and equipment.
      b. Taxes, insurance, and bonds.
      c. Overhead and profit.
      d. Justification for any change in Contract Time.
      e. Credit for all deletions from Contract, similarly documented.
   2. Support each claim for additional costs with additional information:
      a. Origin and date of claim.

b. Dates and times work was performed, and by whom.
c. Time records and wage rates paid.
d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

E. Execution of Change Orders: Archimages, Inc shall issue Change Orders for review, signatures of all parties.

F. Following execution of Change Order, immediately revise Schedule of Values and Application for Payment forms, as required to accurately record all previously executed Change Orders including separate line item and adjust Contract Sum.

G. Promptly revise progress schedules, as required to accurately reflect all changes within Contract Time and resubmit.

H. Promptly enter all changes within Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment, as previously specified for progress payments, identifying Final, accurate Total adjusted Contract Sum, previous payments, and that Sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:

1. All closeout procedures, documentation delineated within Section 01 70 00 - Execution and Closeout Requirements.

PART 2 PRODUCTS-NOT APPLICABLE...

PART 3 EXECUTION-NOT APPLICABLE...

END OF SECTION

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KIRKWOOD PUBLIC WORKS
ALTERNATES

Alternate #1A – Police Dispatch. The scope of this alternate is to prepare the currently unfinished 3rd floor area of the office building on the east side of the warehouse building to accept the relocation of the existing police dispatch center.

This scope shall include but may not be limited to the build-out of the unfinished space and shall include all fire protection, plumbing, HV/AC, electrical and systems. An exterior portable engine generator docking station. Refer to the Electrical one-line drawing and other electric drawings. Fire alarm, surveillance, data & access control as depicted in the drawings and specifications and consistent with the division of responsibility in the documents. It shall also include all finishes as outlined in the Architectural drawings and specifications.

All work associated with the relocation on the existing dispatch center operations content, including St. Lous County EEC equipment, dispatch furniture and City dispatch equipment shall be relocated by the City of Kirkwood.

Alternate #1B – Whole building Generator. The addition of an exterior full-building generator that will replace the base scope exterior portable engine generator docking station. Refer to the Electrical one-line drawing and other electric drawings.

Alternate # 2A – Recycling Center Site Work. The scope of this alternate shall include but may not be limited to improvements to the existing storm water detention basin, relocate the north entry road add the modular block retaining wall & guardrail. Stub the storm sewers to a MH on the SE side of the relocated road for future tie in and incorporate some fencing changes. This alternate does not delete the base scope recycling concrete pad, electric service and distribution support one (1) bailer and (2) dual EV charges. Kirkwood Electric will set the pole with pole mounted transformers and provide all primary work to be coordinated by GC/EC. The existing service secondary conductors, conduit, utility metering, service panel board equipment support structures, grounding and distribution will be included in this alternate at the exterior panel.

Alternate # 2B – Upgraded Recycling Center (alternate # 2B is complementary and dependent to alternate 2A. It will not be accepted if alternate #2A is not accepted). If Alternate #2B is accepted, then the base scope recycling concrete pad will be deleted. The improvements shall include but may not be limited to the two-level recycling area, the parking area, remainder of the storm sewer scope to the MH from Alternate 2A and electrical improvements including electrical distribution to support multiple pieces of equipment and an additional dual EV charger. To be coordinated by GC/EC

Alternate #3 – Energy Management System. The scope of this alternate shall include but may not be limited to energy management controls ILO programmable thermostats at office areas in the 3 story office building on the east side of the building, the water department suite in the SW corner. Break and locker room areas, facilities offices on the west side of the building and the fleet office on the east side of the warehouse adjacent to the office building

Alternate #4 – Paint exterior. The scope shall include but may not be limited to painting the entire exterior of the building as indicated in the documents. Base scope shall include any patching of existing paint due to scheduled improvements.

Alternate #5 – South Roof Replacement. The scope of this alternate is to remove and replace the roof on the south warehouse section of building. This would include the overflow drains and associated piping. All miscellaneous patching for new penetrations shall be in the base scope.

Alternate #6 – Storm Shelter. The scope of this alternate shall include but may not be limited to improvements required to upgrade an area at and below the existing warehouse mezzanine along the west edge of the warehouse in the locker room area into a storm shelter as well. It will include selective demolition, structural upgrades, MEP/FPs and finishes.

Alternate #7 – Schedule. The bidder proposes to complete the project in a shorter duration of calendar days. Bidder to list the number of calendar days from contract date/notice to proceed date.

Alternates are not required to be awarded in order listed, with exception of 2A & 2B. Alternates may be considered as part of the award process along with schedule at the City of Kirkwood discretion and to their advantage.

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.
B. Web Based project software service.
C. Electronic document submittal service.
D. Preconstruction meeting.
E. Progress meetings.
F. Construction progress schedule.
G. Contractor's Daily Reports.
H. Progress photographs.
I. Coordination drawings.
J. Submittals for review, information, and project closeout.
K. Number of copies of submittals.
L. Requests for Information procedures.
M. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions.
B. Section 00 73 00 - Supplementary Conditions.
C. Section 01 60 00 - Product Requirements.
D. Section 01 70 00 - Execution and Closeout Requirements.
E. Section 01 78 00 - Closeout Submittals.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ALL STANDARDS"...

A. AIA G716 - Request for Information; 2004.
B. AIA G810 - Transmittal Letter; 2001.
C. CSI/CSC Form 12.1A - Submittal Transmittal; Current Edition.
D. CSI/CSC Form 13.2A - Request for Information; Current Edition.

1.04 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
B. Provide the following types of submittals to Architect:
    1. Requests for Information (RFI).
    2. Requests for Substitution.
    3. Shop drawings, product data, and Product Samples.
    4. Testing and Inspection reports.
    5. Design data.
    6. Manufacturer's written Instructions and Feld Reports.
    7. Applications for Payment and Change Order Requests.
    8. Progress schedules and Updated Progress Schedules.
    9. Coordination drawings.
    10. Correction Punch List and Final Correction Punch List.
    11. Closeout Submittals.

1.05 PROJECT COORDINATOR

A. Project Coordinator: **"As designated by Owner's Representative".**

B. Fully cooperate with designated Project Coordinator, in allocation of mobilization areas, Existing Project Site; for field offices, sheds, access, traffic, and parking facilities.

C. During construction, fully coordinate use of Existing Project Site, facilities via designated Project Coordinator.

D. Fully comply with Project Coordinator's procedures for intra project communications; submittals, reports, records, schedules, coordination drawings, recommendations; and resolution of any ambiguities, conflicts.

E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 10 00 - Summary.

F. Coordinate field engineering and layout work under instructions of the Project Coordinator.

G. Provide the following types of submittals to Architect;
   1. Shop drawings, product data, and Product samples.
   2. Testing and Inspection Reports.
   3. Design data.
   4. Manufacturer's written Instructions and Field Reports.
   5. Applications for Payment.
   6. Construction Progress Schedules.
   7.
   8. Correction Punch List and Final Correction Punch List.
   9. Closeout Submittals.

PART 2 PRODUCTS - "NOT APPLICABLE"...

PART 3 EXECUTION

3.01 WEB BASED PROJECT SOFTWARE SERVICE

A. Web Based Project Software Service: Contractor shall provide, administer and use web based project software, as required to host, manage all Project communications and documentation.
   1. Include, **at minimum**, the following features:
      a. Project directory, including Owner, Contractor, Subcontractors, Architect, Engineers, and any other entities involved within Project. Include names of contact persons and contact information for each entity.
      b. Access control for each entity and for each workflow process to determine each entity's digital rights to create, modify, view, and print documents.
      c. Workflow planning, allowing customization of workflow for each project entity.
      d. Creation, logging, tracking, and notification for project communications.
      e. Tracking of project communication statuses in real time, including timestamped response log.
      f. Processing and tracking of Payment Applications.
      g. Processing and tracking of Contract Modifications.
      h. Creation and distribution of all Meeting Minutes.
      i. Document management for all drawings, specifications, coordination drawings.
      j. Management of Construction progress photographs.
      k. Mobile device compatibility.
      l. Creation of data analytics reports.
      m. Creation and export of editable logs for software functions. Provide Owner, Architect, and Engineers with rights, ability to download Logs.
   2. Cost: Contractor pays cost of service.
   3. Cost: Pay cost of service. Include the cost of the service in the contract sum.

4. Provide up to (36) Thirty Six user licenses for use by Owner, Architect, Engineers and any other entities involved within this particular Project.
5. Fully comply with Software service's current published licensing agreements.
6. Training: Provide training session for all users of software service.
   a. Owner's Representatives shall be included within this training.
7. Project Closeout: Architect shall determine when to terminate software service for this particular Project. Contractor shall be responsible for obtaining archive copies of all files for Owner, Architect.

3.02 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format and transmitted via an Internet based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
   1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
   2. Contractor shall be required to use this service.
   3. It is Contractor's responsibility to submit documents within allowable format.
   4. Subcontractors, suppliers, Architect and Engineers shall be permitted to use said Service at no charge.
   5. Users of Service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com),
   6. Paper document transmittals will not be reviewed; emailed electronic documents will be reviewed.
   7. All other specified submittal and document transmission procedures apply.

B. Cost: Entire Cost of Service shall be paid by Contractor.

C. Training: One web based training session will be arranged for all participants, with representatives of Contractor participating.
   1. Owner Representative shall be included within this training.

D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.03 PRECONSTRUCTION MEETING

A. Contractor shalll schedule meeting following issuance of Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Architect.
   3. Contractor.

C. Agenda:
   1. Execution of Owner Contractor Agreement.
   2. Submission of executed bonds and Insurance Certificates.
   3. Distribution of Contract Documents.
   4. Submission of list of subcontractors, list of products, schedule of values and Construction Progress schedule.
   5. **Designation of personnel representing all parties to Contract.**
   6. Procedures and processing of field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
   7. Scheduling.

8. Scheduling activities of a Geotechnical Engineer.

D. Contractor shall record minutes and distribute copies withiin (2) Two Calendar days, immediately following Meeting, to Owner, Architect, all participants, and any others affected by decisions made during said Meeting.

3.04 SITE MOBILIZATION MEETING

A. **Contractor** shall schedule Meeting at Existing Project Site.

B. Attendance Required:
1. Contractor's Project Manager and Site Superintendent.
2. Owner's Representative.
3. Architect.

C. Agenda:
1. Use of premises by Owner and Contractor.
2. Owner's requirements.
3. Survey and building layout.
4. Security and housekeeping procedures.
5. Schedules.
6. Application for Payment procedures.
7. Procedures for testing and Inspections.
8. Procedures for maintaining record documents.
9. Requirements for start up of equipment.

D. Contractor shall record minutes and distribute copies within (2) Two Calendar days, immediately following Meeting, to Owner, Architet, all participants and any others affected by those decisions made during said Meeting.

3.05 PROGRESS MEETINGS

A. Contractor shall schedule and administer all meetings throughout entire progress of this particular Project.

B. Contractor shall make all arrangements for Meetings, prepare agenda with copies for all participants.

C. Attendance Required:
1. Contractor's Project Manager and Site Superintendent.
2. Owner.
3. Architect.

D. Agenda:
1. Review **Seperate** hard copy of previous Meetinhg minutes.
2. Review all Work currently in progress.
3. Field observations and decisions.
4. Identification, discussion of any issues that may impede planned progress.
5. Review Submittals Schedule and current status of Submittals.
6. Review RFI Log and current status of same.
7. Review of all off site fabrication and delivery schedules.
8. Maintenance of current Construction Progress Schedule.
9. All corrective measures, as required to regain original Projected Construction Schedule.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and Work standards.
13. Effect, if any, of proposed changes on Construction Progress Schedule.
14. Any other business relating to said Work.

E. Contractor shall record minutes and distribute copies within (2) Two Calendar days, immediately following meeting, to Owner, Architect, all prticipants and any others affected by those decisions made during said Meeting.

3.06 CONSTRUCTION PROGRESS SCHEDULE

A. Within (10) Ten Calendar days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

B. If preliminary schedule requires revisions, submit fully revised schedule within (5) FIve Calendar days.

C. Within (10) Ten Calendar days, following review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that all major contractors have reviewed and accepted proposed schedule.

D. Within (5) Five Calendar days following joint review, submit complete schedule.

E. Submit an updated, revised Construction Progress Schedule with each Application for Payment, **dated as corresponding Application for Payment. Payment will not be approved without receipt of updated Construction Progress Schedule.**

3.07 DAILY CONSTRUCTION REPORTS

A. Include only factual information. **Do not** include personal remarks or opinions regarding operations and/or personnel.

B. In addition to transmitting electronically a copy to Owner and Architect, submit two printed copies at weekly intervals.
   1. Submit in format acceptable to Owner, Architect

C. Prepare a daily construction report recording the following information concerning events at ExistinProject site and project progress:
   1. Date.
   2. High and low temperatures, and general weather conditions.
   3. List of all Subcontractors presnt at Existing Project site.
   4. Approximate count of all personnel present at Existing Project site.
      a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
   5. All major equipment included within Existing Project site.
   6. All Materials deliveries.
   7. Safety, environmental, or industrial relations incidents.
   8. Meetings and significant decisions.
   9. Unusual events (submit a separate special report).
   10. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
   11. Meter readings and or similar recordings.
   12. Emergency procedures.
   13. Directives and any requests via those Authorities Having Jurisdiction.
   14. Change Orders received and implemented.
   15. Testing and or inspections performed.
   16. List of verbal instruction given by Owner's Representative, Architect..
   17. Signature of Contractor's authorized representative.

3.08 PROGRESS PHOTOGRAPHS

A. Submit minimum (12) Twelve photographs with each Application for Payment, taken not more than (2) Two Calendar days, prior to submission of said Application.

B. Submit additional new photographs at least once per month, within (3) Three Calendar days, after having been taken.

C. Maintain one set of all photographs at Existing Project Site for future, historical reference.

D. Photography Type: Digital; electronic files.

E. Provide photographs of Existing Project Site and Construction progress, throughout progression of said Work, produced by an experienced photographer, acceptable to Owner's Representative, Architect..

F. Take photographs as evidence of existing project conditions as follows:
   1. Interior views.
   2. Exterior views.

G. Views:
   1. Provide aerial photographs from four cardinal views at each specified time, until structure is enclosed.
   2. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
   3. Consult with Architect for instructions on views required.
   4. Provide factual presentation.
   5. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
   6. Point of View Sketch: Provide sketch identifying point of view of each photograph.

H. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email only.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.
   4. Photo CD(s): Provide 1 copy including all photos cumulative to date and PDF file(s), with files organized in separate folders by submittal date.
   5. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

I. Optical Slides: 35 mm, color; 1 set assembled into transparent slide holder sheets for 3-ring binder.
   1. Binders: Provide one 2-inch binder with initial submittal.
   2. Identification: Mark each slide with project identification, date and time of view, and view identification.
   3. Point of View Sketch: Include printed copy of point of view sketch with each submittal; include point of view identification on each slide.

J. Photographer Quality Prints: Full color; three prints of each view.
   1. Glossy; smooth texture; white tint; single weight; high contrast.
   2. Size: 8 by 10 inch; mounted for binder and tabs.
   3. Identify each print on back. Identify name of Project, contract number, phase, orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
   4. Assemble prints into transparent holder sheets for three ring binder.
   5. Binders: Provide one 2-inch binder with initial submittal.
   6. Point of View Sketch: Include printed copy of point of view sketch with each submittal; include point of view identification on each print.
   7. Negatives: Include negatives with print submittal, arranged in chronological sequence, with typed table of contents.
   8. Negatives: Negatives will remain property of photographer; require that photographer maintain said negatives for (15) Fifteen Years from date of previously established Project Substantial Completion Date.

3.09 COORDINATION DRAWINGS

A. Provide all information required by Project Coordinator for preparation of coordination drawings.

B. Review drawings prior to submission to Architect.

3.10 REQUESTS FOR INFORMATION (RFI)

A. Definition: Contractor's request seeking one of the following:
   1. An interpretation, amplification, clarification of some requirement of Contract Documents arising from an inability to determine from them the exact material, process, or systems to be installed; or when said elements of construction are required to occupy the same space (interference); or when an item of Work is described differently within more than one place in Contract Documents.
   2. A resolution to an issue which has arisen, due to existing field conditions that may affect design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for additional information, pertainng to Contract Documents. Failure to submit said RFI in a timely manner **is not** a legitimate cause for claiming additional costs or delays with in execution of the Work.
   1. Prepare a separate RFI for each specific item.
      a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
      b. **Do not** forward requests which solely require internal coordination between subcontractors.
   2. Prepare in a format and with content acceptable to Architect.
      a. Use AIA G716 - Request for Information .
      b. Use CSI/CSC Form 13.2A - Request for Information.
   3. Prepare using an electronic version of the form appended to this section.
   4. Prepare using software provided by previously established Electronic Document Submittal Service.
   5. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
   1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
   2. Unacceptable Uses for RFIs: **Do not** use RFIs to request the following::
      a. Approval of submittals (use procedures specified elsewhere in this section).
      b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
      c. Changes that entail change in Contract Time or Contract Sum (comply with provisions of the Conditions of the Contract).
      d. Different methods of performing Work than those indicated within Contract Documents (comply with provisions of the Conditions of the Contract).
   3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
   4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response
      a. Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by Architect and or Engineers, due to processing of such RFIs.

E. Content: Include those identifiers necessary for tracking status of each RFI, and information necessary to provide an actionable response.
   1. Official Project name and number, and any additional required identifiers established in Contract Documents.
   2. Owner's, Architect's, and Contractor's names.
   3. Discrete, consecutive RFI number, and descriptive subject/title.

4. Issue date.
5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
6. Annotations: Field dimensions and/or description of conditions which have engendered said request.
7. **Contractor's suggested resolution:** A written and/or a graphic solution, to scale, is required. If applicable, identify the likely impact of the suggested resolution on Contract Time or Sum.

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

G. RFI Log: Prepare and maintain a tabular Log of RFIs, entire duration of Project.
1. Indicate current status of every RFI. Update log promptly and on a weekly basis.
2. Note dates of when each request is made, and when a response is received.
3. Highlight all items requiring priority or expedited response.
4. Highlight all items for which a timely response has not been received to date.
5. Remove any improper or frivolous RFIs.

H. Review Time: **Architect shall respond, return RFIs to Contractor within (13) Thirteen Business days of receipt.** For the purpose of establishing start of said response period, those RFIs received after 1:00 p.m. shall be considered as having been received on the following regular Business day.
1. **Response period may be shortened or lengthened, as required, at Architect's descretion.**

I. Responses: Content of answered RFIs **will not** constitute, in any manner a directive or authorization to perform any additional Work, or delay Project. If in Contractor's belief it is likely to lead to a change to Contract Sum orTime, promptly issue notice to this effect to Owner's Represntative, Architect and immediately follow up with appropriate Change Order request, within (3) Three Calendar days of issue date of Request for Information response.
1. Response may include a request for additional information, in which case, original RFI will be deemed as having been answered, and an amended vshall be issued forthwith, by Contractor. Identify the amended RFI with an R suffix to original number.

3.11 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals within a tabular format.
1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
2. Coordinate with Contractor's construction schedule and schedule of values.
3. Format schedule, as required to allow tracking of status of submittals throughout duration of construction.
4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
5. Account for all time required for preparation, review, Manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time, as required to make corrections, revisions to initial submittals, and time for their review.

3.12 SUBMITTALS FOR REVIEW

A. Whenollowing are specified in individual sections, submit them for review:
1. Product data.
2. Design data.
3. Shop drawings.
4. Samples for selection.

5. Samples for verification.
6. Additional data required, this particular Project.

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

C. Product Samples will be reviewed for General Construction, Color, Pattern and Finish.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.13 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Sustainability design Submittals and Reports.
3. Certificates.
4. Test reports.
5. Inspection reports.
6. Manufacturer's instructions.
7. Manufacturer's Field Reports.
8. Field engineering Daily Reports.

B. Submit for Architect's knowledge as Contract Administrator.

3.14 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

D. Final Property Survey.

E. Submit for Owner's benefit, during and after Project Substantial Completion.

3.15 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Documents for Review:
1. Small Size Sheets, Not Larger Than 8-1/2 by 11 inches: Submit one copy; the Contractor shall make Contractor's own copies from original returned by the Architect after making a file copy.
2. Small Size Sheets, Not Larger Than 8-1/2 by 11 inches: Submit the number of copies that Contractor requires, plus two copies that will be retained by Architect.

C. Documents for Information: Submit (3) three copies.

D. Extra Copies at Project Closeout: See Section 01 78 00 - Closout Submittals.

E. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. After review, produce duplicates.
2. Retained samples will **not be** returned to Contractor.

3.16 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Use a separate transmittal for each item.
   2. Use a single transmittal for related items.
   3. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
   4. Transmit using approved form.
      a. Use Form AIA G810.
      b. Use Form CSI/CSC Form 12.1A.
      c. Use Contractor's form, subject to prior approval by Architect.
      d. Use form generated by Electronic Document Submittal Service software.
   5. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
   6. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
   7. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
      a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
   8. Deliver each submittal on date noted in submittal schedule.
      a. Deliver submittals to Architect at business address.
      b. Deliver submittals to Construction Manager at business address.
      c. Deliver submittals to Architect at business address.
      d. Send submittals via electronic format, email to Architect.
      e. Upload submittals in electronic form to Electronic Document Submittal Service website.
   9. Schedule submittals to expedite the Project, and coordinate submission of related items.
      a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
      b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
      c. For sequential reviews involving approval from those Authorities having Jurisdiction, in addition to Architect's approval, allow an additional (30) Thirty Business days..
   10. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed Work.
   11. Provide space for Contractor and Architect review stamps.
   12. When revised for resubmission, identify all changes made since previous submission.
   13. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
   14. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
   15. Submittals not requested will not be recognized or processed.
   16. Submittals not requested will be recognized, and will be returned "Not Reviewed",

B. Product Data Procedures:
   1. Submit only information required by individual specification sections.
   2. Collect required information into a single submittal.
   3. Submit concurrently with related shop drawing submittal.
   4. **Do not** submit (Material) Safety Data Sheets for materials or products.
   5. Submit sustainable design reporting submittals under separate cover.

C. Shop Drawing Procedures:

1. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
   1. Transmit all related items together, as (1) one single package.
   2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
   3. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

3.17 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and take appropriate action.

B. Submittals for Information.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
   1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

D. Architect's and consultants' actions on items submitted for review:
   1. Authorizing purchasing, fabrication, delivery, and installation:
      a. "Reviewed", or language with same legal meaning.
         1) Submittal has been reviewed and found to be in general conformance with the design intent and specifications. Resubmittal is not required.
         2) Note that the design team does not “approve” submittals.
         3) The use of this term by construction management software, orally, or in corrections or comments made on submittals during this review do not relieve Contractor, subcontractor, or supplier from compliance with requirements of the drawings and specifications.
      b. "Reviewed as Noted", or language with same legal meaning.
         1) Submittal has been reviewed for general conformance with the design intent and specifications and found to require minor corrections. The required corrections are indicated on the returned submittal. Make the noted corrections. Resubmittal is not required.
         2) Please Note, Design Team does not approve submittals.
         3) The use of this term by construction management software, orally, or in corrections or comments made on submittals during this review do not relieve Contractor from compliance with requirements of the drawings and specifications.
   2. Not Authorizing fabrication, delivery, and installation:
      a. "Revise and Resubmit".
         1) Resubmit revised item, with review notations acknowledged and incorporated.
         2) Submittal is not found to follow the design intent, details, or specifications. Make the revisions indicated and resubmit to Architect for further review.
         3) Non-responsive resubmittals may be rejected.
      b. "Rejected".
         1) This indicates that the submittal is unacceptable, either because the submittal document does not comply with requirements, or the products or details of the submittal are unacceptable. A new submittal is required.
         2) Submit item complying with requirements of Contract Documents.

E. Architect's and consultants' actions on items submitted for information:
   1. Items for which no action was taken:
      a. "Received" - to notify the Contractor that the submittal has been received for record only.

END OF SECTION

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SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Quality assurance.

C. References and standards.

D. Testing and Inspection Agencies.

E. Control of installation.

F. Manufacturers' field services.

G. Defect Assessment.

1.02 RELATED, REQUIREMENTS

A. Document 00 31 00 - Available Project Information.

B. Document 00 72 00 - General Conditions.

C. Section 01 21 00 - Allowances.

D. Section 01 30 00 - Administrative Requirements.

E. Section 01 60 00 - Product Requirements.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).

B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2025a.

C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2023.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.

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

F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2021.

G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.

H. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2021.

1.04 DEFINITIONS

A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.

B. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.

1. Design Services Types Required:
    a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor’s sole responsibilities for construction means, methods, techniques, sequences, and procedures.
    b. Design Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.

C. Design Data: Design related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.05 CONTRACTOR'S, CONSTRUCTION PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of Project's Conditions for Construction Contract.

B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations.

C. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
   1. Temporary sheeting, shoring, or supports.
   2. Temporary scaffolding.
   3. Temporary bracing.
   4. Temporary falsework for support of spanning or arched structures.
   5. Temporary foundation underpinning.
   6. Temporary stairs or steps required for construction access only.
   7. Temporary hoist(s) and rigging.
   8. Investigation of soil conditions to support construction equipment.

1.06 CONTRACTOR'S, DESIGN PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Base design on performance and/or design criteria indicated in individual specification sections.
   1. Submit a Request for Interpretation to Architect if the criteria indicated are not sufficient to perform required design services.

1.07 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Designer's Qualification Statement: Submit for Architect's knowledge as contract administrator, or for Owner's information.
   1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
      a. Full name.
      b. Professional licensure information.
      c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.

C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
   1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
   2. Include required detailed Product Data and Shop Drawings, particular to this Project.
   3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
   4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.

D. Test Reports: After each test/inspection, promptly submit PDF copies of report to Owner and Architect.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.

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

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

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

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

G. Manufacturer's Field Reports: Submit Reports for Architect's review.
1. Submit report in duplicate within 30 days of observation to Architect for information.
2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

H. Erection Drawings: Submit drawings for Architect's review.
1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.08 QUALITY, ASSURANCE

A. Testing Agency Qualifications:
1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

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

C. Contractor's Quality Control (CQC) Plan:
1. **Prior to start of work, submit a comprehensive plan describing how contract deliverables will be produced. Tailor said plan to those requirements of this particular Project. Include following information:**
a. Management Structure: Identify personnel responsible for quality. Include a chart showing lines of authority.
1) Include qualifications (in resume form), duties, responsibilities of each person assigned to CQC function.

b. Management Approach: Define, describe, and include in the plan specific methodologies used in executing the work.
    1) Management and control of documents and records relating to quality.
    2) Communications.
    3) Coordination procedures.
    4) Resource management.
    5) Process control.
    6) Inspection and testing procedures and scheduling.
    7) Control of noncomplying work.
    8) Tracking deficiencies from identification, through acceptable corrective action, and verification.
    9) Control of testing and measuring equipment.
    10) Project materials certification.
    11) Managerial continuity and flexibility.
c. Owner will not make a separate payment for providing and maintaining a Quality Control Plan. Include associated costs in Bid price.
d. Acceptance of the plan is required prior to start of construction activities not including mobilization work. Owner's acceptance of the plan will be conditional and predicated on continuing satisfactory adherence to the plan. Owner reserves the right to require Contractor to make changes to the plan and operations, including removal of personnel, as necessary, to obtain specified quality of work results.

D. Quality Control Personnel Qualifications. Engage a person with requisite training and experience, as required to implement and manage quality assurance (QA) and quality control (QC) for the project.

1.09 REFERENCES,STANDARDS

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

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

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

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

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

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

G. **Wherever Project Manual identifies Reference Standards, the most Current Edition of said Standards shall apply to this particular Project**.

1.10 TESTING, INSPECTIONS AGENCIES AND SERVICES

A. Contractor shall employ services of an Independent Testing Agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 21 00; see Section 01 21 00 and applicable sections for description of services included in allowance.

B. Owner shall pay for services of an Independent Testing Agency to perform said Inspections and Testing. Reference Section 01 21 00- Allowances for additional Content.

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

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

PART 2 PRODUCTS - "NOT APPLICABLE"...

PART 3 EXECUTION

3.01 CONTROL, INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with Manufacturers' instructions, including each step in sequence.

C. Should Manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK UPS

A. Before installing any portions of Work where mock ups are required, for each form of construction and finish required to comply with following requirements, using materials indicated for completed Work. The purpose of mock up is to demonstrate proposed range of aesthetic effects and workmanship.

B. All accepted mock ups shall establish standard of quality, Architect shall implement to judge said Work. **No mock up shall remain as portion of permanent Work, this particular Project.**

C. Notify Architect minimum (21) twenty one business days in advance of any dates, times when mock ups will be ready review by Architect, Owner's Representative.

D. Provide well experienced supervisory personnel who shall oversee mock up construction. **Provide only those workers that will be employed during construction of this particular Project.**

E. Tests shall be performed under provisions identified within this Section and as identified in the respective product specification Sections.

F. Assemble and erect all specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

G. Obtain Architect's approval of all mock ups, prior to begining Work, fabrication, or construction.
   1. Architect shall issue written comments within (10) Ten business days of initial review and each subsequent follow up review of said mock ups.
   2. Make all corrections, as necessary until Architect's approval has been received.

H. Architect shall rely on previously approved mock ups, as quality standard for all remaining related Work.

I. Wherever mock up has been previously accepted by Architect, protect said mock up throrughout Construciton period and remove init's enttirety from existing Project SIte, only when directed to do so, in writinh, by Architect.

J. Wherever possible, salvage and recycle demolished mock up materials.

3.03 TOLERANCES

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

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust all Products to appropriate dimensions; position, prior to securing in place.

3.04 TESTING,INSPECTION

A. Reference each individual specification section for testing and inspection required.

B. Testing Agency Duties:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   6. Perform additional tests and inspections required by Architect.
   7. Attend preconstruction meetings and progress meetings.
   8. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, provide all necessary access to Work and Manufacturer's Production Facility.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory minimum (48) forty eight hours prior to expected time for operations requiring any testing,inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Any re-testing required because of non-compliance within specified requirements, shall be performed by same agency.

F. Any re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS, FIELD SERVICES

A. When specified within individual specification sections, require material or product suppliers or Manufacturers to provide qualified staff personnel, as required to observe site conditions,

conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment, as required and initiate instructions when necessary.

B. Submit qualifications of observer to Architect 30 days in advance of required observations.
   1. Observer subject to approval of Architect.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT, ASSESSMENT

A. **Replace all Work, this Section, not in full compliance with Contract Documents.**

END OF SECTION

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Dewatering
B. Temporary utilities.
C. Temporary telecommunications services.
D. Temporary sanitary facilities.
E. Temporary Controls.
F. Security requirements.
G. Vehicular access and parking.
H. Waste removal facilities including services.
I. Project Identification Signage.
J. Field Offices.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

1.03 DEWATERING

A. Provide temporary means and methods for dewatering all temporary facilities and controls.
B. Maintain temporary facilities in operable condition.
C. Maintain temporary facilities as directed by Architect.

1.04 TEMPORARY UTILITIES

A. Owner will provide the following:
    1. Electrical power and metering, consisting of connection to existing facilities.
    2. Water supply, consisting of connection to existing facilities.
B. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
C. Existing facilities may not be used.
D. New permanent facilities may not be used.
E. Use trigger operated nozzles for water hoses, to avoid waste of water.

1.05 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
B. Provide equivalent equipment and connections for Owner's field office.
C. Provide equivalent equipment and connections for Architect's field office.

1.06 TEMPORARY, SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. Use of existing facilities is not permitted.
C. Use of new permanent facilities is not pemitted.
D. Maintain daily in thoroughly clean, sanitary condition.

E. At end of construction, return facilities to same or better condition as originally found.

1.07 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Provide protection for all plants designated to remain. Replace any damaged plants.

D. Protect all vehicular traffic, stored materials, site, and structures from damage.

E. Traffic Controls: as delineated within Drawings and Contract Documents.

1.08 FENCING

A. Provide 8 foot high commercial grade chain link fencng, entire perimeter Existing Project Site, including gates as required with locks.

1.09 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

B. Provide temporary roofing as required by existing conditions.

1.10 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:
   1. Insulated.
   2. STC rating of 35 in accordance with ASTM E90.
   3. Maximum flame spread rating of 75 in accordance with ASTM E84.

C. Paint surfaces exposed to view from Owner-occupied areas.

1.11 SECURITY

A. Provide security and facilities, as required to protect all Work, existing facilities, and Owner's operations from any unauthorized entry, vandalism, damage or theft.

B. Coordinate with Owner's security program.

1.12 VEHICULAR ACCESS, PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Previously designated Existing Project Site roads may be used for construction traffic.

F. Provide temporary parking areas to accommodate construction personnel. When Project Site space is not adequate, provide additional off Project Site parking.

G. A portion of existing parking areas may be used for construction parking.

H. Do not allow vehicle parking on existing pavement.

I. Provide minimum (3) Three parking spaces for Owner Representative use, immediately adjacent Temporary Construction Trailer.

J. Provide minimum (3) Threeparkinhg spaces for Architect use, immediately adjacent Temporary Construction Trailer.

1.13 WASTE REMOVAL

A. Waste Removal and Disposal per Contrat Documents an any regulations enforced by those Local Authorities having Jurisdiction.

B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

C. Provide containers with secured lids. Remove trash from site periodically.

D. If materials to be recycled or reused on the project must be stored on site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

E. Open free fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.14 PROJECT SIGNS

1.15 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction as directed by Architect..

B. Erect on Project Site as directed by Architect.

C. Erect on Project Site as directed by Architect.

D. Provide project identification sign of design, construction, and location approved by Owner.

E. No other signs allowed without Owner permission, except those required by law.

1.16 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

C. Provide separate private office similarly equipped and furnished, for use of Owner.

D. Provide separate private office similarly equipped and furnished, for use of Architect and Owner.

E. Locate offices a minimum distance of (75) Seventy Five feet from any existing, new structure.

1.17 REMOVAL OF UTILITIES, FACILITIES, CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Remove underground installations to a minimum depth of (2) Two Feet. Finish grade as directed by Civil Engineer, Architect.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - "NOT APPLICABLE"...

PART 3 EXECUTION - "NOT APPLICABLE"...

END OF SECTION

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SECTION 015713
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Performance bond.

E. Compensation to owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.2 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

B. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.

C. Section 32 9219 - Seeding: Permanent turf for erosion control.

1.3 REFERENCE STANDARDS

A. ASTM D 4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus; 2007.

B. ASTM D 4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2009).

C. ASTM D 4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2004 (Reapproved 2009).

D. ASTM D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2008.

E. ASTM D 4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2004.

F. ASTM D 4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2002 (Reapproved 2009).

G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition.

H. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; Federal Highway Administration; 1995.

I. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 1986.

J. "Model Best Management Practices (BMP) for Land Disturbance – Sediment and Erosion Control", St. Louis County (latest edition).

K. It is the Contractor's responsibility to obtain a copy of these standard Specifications and details, whether at the state, county, or local level.

1.4 PERFORMANCE REQUIREMENTS

A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2003 Construction General Permit (CGP), whether the project is required by law to comply or not.

B. Comply with all requirements of "Model Best Management Practices (BMP) for Land Disturbance – Sediment and Erosion Control", St. Louis County (latest edition).

C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

D. All erosion control shall be installed as soon as possible and before precipitation occurs. The erosion control measures shall be continuously maintained by the Contractor until final acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the architect or construction manager.

E. The architect or construction manager will notify the Contractor in writing of any noncompliance with the provisions of these specifications. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the architect or construction manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damage by the Contractor unless it was later determined that the Contractor was in compliance. Absence of any such notification does not relieve the contractor of his responsibilities to comply with all these specifications.

F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.

1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.

1. Control movement of sediment and soil from temporary stockpiles of soil.
2. Prevent development of ruts due to equipment and vehicular traffic.
3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the owner.

H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.

1. Prevent windblown soil from leaving the project site.
2. Prevent tracking of mud onto public roads outside site.
3. Prevent mud and sediment from flowing onto sidewalks and pavements.
4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the owner.

I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including open drainage ways, storm sewers, and sanitary sewers.

1. If sedimentation occurs, install or correct preventive measures immediately at no cost to owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including open drainage ways, storm sewers, and sanitary sewers.

1. If sedimentation occurs, install or correct preventive measures immediately at no cost to the owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

K. Open Water: Prevent standing water that could become stagnant.

L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.5 SUBMITTALS

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

B. Erosion and Sedimentation Control Plan: The contractor shall reference the approved Storm Water Pollution Prevention Plan (SWPPP) for erosion control means and methods.

C. Inspection Reports: Submit reports of each inspection to architect and construction manager; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

D. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.1 MATERIALS

A. General: Surface drainage from cuts, fills, topsoil or other material stockpiles, within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall, if turbidity producing materials are present, be held in sedimentation ponds or shall be graded to control erosion. Temporary erosion and sediment control measures including but not limited to berms, drains, or sedimentation basins, are required to meet these standards and shall be provided and maintained until permanent drainage and erosion control facilities are completed and operating. The area of bare soil exposed by construction operations at any one time should be held to a minimum.

B. Grading Operations:

1. Grading operations shall be scheduled so excavated materials shall be immediately placed into compacted embankments.
2. Where steep slopes or abrupt changes in grade are required, a division channel or berm shall be constructed at the top of the slope to cause the surface water to flow along the diversion to controlled slope drains. The contractor shall reference the approved Storm Water Pollution Prevention Plan (SWPPP) for erosion control means and methods.

C. Mulch: Use one of the following:

1. Wood waste, chips, or bark.
2. Erosion control matting or netting.
3. Grass
4. Mulch shall be applied to slopes in excess of one foot vertical to ten feet horizontal unless otherwise shown.

D. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use

species known to be excessively competitive or prone to volunteer in subsequent seasons.

1. Earth areas outside of building, walks and paving that are not to be immediately planted with permanent grass or landscaping shall be seeded with a temporary seed that will produce a fast growing cover resistant to erosion as required per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.
2. Temporary grassing and mulching shall conform to St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.

E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; Silt fence shall be per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.

1. Silt fences shall be constructed at the toe of embankment or perimeter of all disturbed earth areas and shall be located to interrupt silt transport conveyed by overland surface drainage runoff from the disturbed areas.

2. Sediment accumulated behind silt fences shall be removed, redistributed and compacted immediately prior to beginning temporary grassing.

F. Inlet Barriers:

1. Block and gravel inlet protection, silt fence or inlet protection fabric drops where indicated, shall be installed around perimeter at each inlet where inlets are near to work performed as part of this project. Fiber and filter rolls may be used around inlets that are constructed within paved areas or at inlets in pavement, downstream of construction areas. Silt deposits shall be periodically removed during construction and immediately prior to final acceptance.

G. Dust Control:

1. The Contractor shall maintain all excavations, embankments, stockpiles, haul roads, temporary and permanent access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust and to minimize offsite transport of soil by wheels which would cause a hazard or nuisance or nuisance to others.
2. Temporary or permanent graded access drives from adjacent paved public or private roads or rights-of-way shall be temporarily surfaced per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance. Maintain throughout construction period. Sprinkle regularly to settle accumulated silt.
3. Approved temporary methods of stabilization of all areas other than the construction entrance road shall consist of sprinkling, chemical treatment, light bituminous treatment, gravel surfacing or similar methods to control dust. Sprinkling to be approved and must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Contractor must have sufficient competent equipment on the job at all times if sprinkling is used.
4. Dust control shall be performed as the work proceeds and whenever a dust nuisance or

hazard occurs.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.2 PREPARATION

A. Schedule all work so that soil surfaces are left exposed for the minimum amount of time.

3.3 SCOPE OF PREVENTIVE MEASURES

A. All erosion control shall be installed and continuously maintained by the Contractor until final acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the architect.

B. Construction Entrances: Traffic-bearing aggregate surface.

1. Width: As required; 24 feet, minimum (2-way); 14 feet, minimum (1-way).
2. Length: 50 feet, minimum.
3. Provide at each construction entrance from public right-of-way.
4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences, fiber and filter rolls

1. Provide linear sediment barriers:

    a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
    b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
    c. Along the toe of cut slopes and fill slopes.
    d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas
    e. Across the entrances to culverts that receive runoff from disturbed areas.

D. Storm Drain Inlet Sediment Traps: As detailed on drawings.

E. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

F. Soil Stockpiles: Protect using one of the following measures:

1. Cover with polyethylene film, secured by placing soil on outer edges.
2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

G. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.

1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

H. Temporary Seeding: Use where temporary vegetated cover is required.

3.4 INSTALLATION

A. Refer to "Model Best Management Practices (BMP) for Land Disturbance – Sediment and Erosion Control", St. Louis County (latest edition) for installation requirements.

3.5 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours of any storm event at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:

1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Clean out temporary sediment control structures weekly and relocate soil on site or remove from site as directed by architect or construction manager.

3.6 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by architect or construction manager.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION 015713

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Product Requirements.

B. Transportation, handling, storage, protection.

C. Product option requirements.

D. Substitution limitations.

E. Procedures for Owner-supplied products.

F. Maintenance materials.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary.

B. Section 01 40 00 - Quality Requirements: Product quality monitoring.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 16 CFR 260.13 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; Recycled Content; Current Edition.

B. ANSI A138.1 - Green Squared American National Standard Specifications for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials; 2011 (Reaffirmed 2021).

C. ANSI/NSC 373 - Sustainable Production of Natural Dimension Stone; 2019.

D. ASTM D6866 - Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis; 2024a.

E. BIFMA e3 - Furniture Sustainability Standard; 2024.

F. C2C (DIR) - C2C Certified Products Registry; Cradle to Cradle Products Innovation Institute; Current Edition.

G. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2; 2017.

H. CAN/CSA Z809 - Sustainable Forest Management; 2016 (Reaffirmed 2021).

I. EN 15804 - Sustainability of Construction Works - Environmental Product Declarations - Core Rules for the Product Category of Construction Products; 2022 (Corrigendum 2021).

J. GreenScreen (LIST) - GreenScreen for Safer Chemicals List Translator; Clean Production Action; Current Edition.

K. GreenScreen (METH) - GreenScreen for Safer Chemicals Method v1.2; Clean Production Action; Current Edition.

L. HPDC (HPD-OLT) - Create an HPD On-Line Tool; Health Product Declaration Collaborative; Current Edition.

M. ISO 14025 - Environmental Labels and Declarations - Type III Environmental Declarations - Principles and Procedures; 2006.

N. ISO 14040 - Environmental Management - Life Cycle Assessment - Principles and Framework; 2006, with Amendment (2020).

O. ISO 14044 - Environmental Management - Life Cycle Assessment - Requirements and Guidelines; 2006, with Amendment (2020).

P. ISO 21930 - Sustainability in Buildings and Civil Engineering Works — Core Rules for Environmental Product Declarations of Construction Products and Services; 2017.

Q. NEMA MG 00001 - Motors and Generators; 2024.

R. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

S. NSF 332 - Sustainability Assessment for Resilient Floor Coverings; 2022.

T. NSF/ANSI 140 - Sustainability Assessment for Carpet; 2024.

U. NSF/ANSI 336 - Sustainability Assessment for Commercial Furnishings Fabric; 2018.

V. NSF/ANSI 342 - Sustainability Assessment for Wallcovering Products; 2019 (Reaffirmed 2025).

W. NSF/ANSI 347 - Sustainability Assessment for Single Ply Roofing Membranes; 2018.

X. UL 100 - Standard for Sustainability for Gypsum Boards and Panels; Current Edition, Including All Revisions.

Y. UL 102 - Sustainability Assessment for Swinging Door Leafs; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Proposed Products List: Submit list of all major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit said list within (5) Five Business days of date of Agreement.
   2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

E. Sustainable Design Submittals: Items necessary to document use of sustainable construction materials, products, and practices.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises.

B. Any unforeseen historic items encountered shall remain property of Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

2.02 NEW PRODUCTS

A. Provide only new Products.

B. Reference Section 01 40 00 - Quality Requirements, for additional Content.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the Manufacturers named and meeting specifications.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any Manufacturer not named.

2.04 MAINTENANCE MATERIALS

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

B. Deliver to Existing Project Site, obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 OWNER SUPPLIED PRODUCTS - "NOT APPLICABLE"...

A. Owner's Responsibilities:

B. Contractor's Responsibilities:

3.02 TRANSPORTATION, HANDLING

A. Package all Products for shipment in manner, as required to prevent damage.

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

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

D. Transport and handle Products in full accordance with Manufacturer's instructions.

E. Transport materials only within covered trucks.

F. Promptly inspect all shipments, as required to ensure Products comply with all requirements, quantities are correct, and Products are undamaged.

G. Provide all equipment, personnel, as required to handle Products only by those methods that shall prevent soiling, disfigurement and damage.

H. Arrange for removal of all packing materials from Existing Project Site.

3.03 STORAGE, PROTECTION

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

B. Store and protect all Products in full accordance with Manufacturers' written instructions.

C. Store with seals and labels intact and legible.

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

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

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

G. Comply with Manufacturer's warranty conditions, if any.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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SUBSTITUTION REQUEST
(During the Bidding/Negotiating Phase)

PROJECT: _____

SUBSTITUTION REQUEST NUMBER: _____

FROM: _____

TO: _____

DATE: _____

A/E PROJECT NUMBER: _____

RE: _____

CONTRACT FOR: _____

SPECIFICATION TITLE: _____

DESCRIPTION: _____

SECTION: _____ **PAGE:** _____

ARTICLE/PARAGRAPH: _____

PROPOSED SUBSTITUTION: _____

MANUFACTURER: _____ **ADDRESS:** _____ **PHONE:** _____

TRADE NAME: _____ **MODEL NO.:** _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.
Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

SUBMITTED BY: _____

SIGNED BY: _____

FIRM: _____

ADDRESS: _____

TELEPHONE: _____

A/E's REVIEW AND RECOMMENDATION:

☐ Approve Substitution—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Approve Substitution as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Reject Substitution—Use specified materials.

☐ Substitution Request received too late—Use specified materials.

SIGNED BY: **DATE:**

SUPPORTING DATA ATTACHED: ☐ **Drawings** ☐ **Product Data** ☐ **Samples** ☐ **Tests** ☐ **Reports** ☐ _____

CSI Form 1.5C (August 2020 version)

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SUBSTITUTION REQUEST
(After the Bidding/Negotiating Phase)

PROJECT: _____

SUBSTITUTION REQUEST NUMBER: _____

FROM: _____

TO: _____

DATE: _____

A/E PROJECT NUMBER: _____

RE: _____

CONTRACT FOR: _____

SPECIFICATION TITLE: _____

DESCRIPTION: _____

SECTION: _____ PAGE: _____

ARTICLE/PARAGRAPH: _____

PROPOSED SUBSTITUTION: _____

MANUFACTURER: _____ ADDRESS: _____ PHONE: _____

TRADE NAME: _____ MODEL NO.: _____

INTALLER: _____ ADDRESS: _____ PHONE: _____

HISTORY: ☐ New Product ☐ 1-4 years old ☐ 5-10 years old ☐ More than 10 years old

DIFFERENCES BETWEEN PROPOSED SUBSTITUTION AND SPECIFIED PRODUCT: _____

☐ Point-by-point comparative data attached — REQUIRED BY A/E

REASON FOR NOT PROVIDING SPECIFIED ITEM: _____

SIMILAR INSTALLATION:

PROJECT: _____ ARCHITECT: _____

ADDRESS: _____ OWNER: _____

DATE INSTALLED: _____

PROPOSED SUBSTITUTION AFFECTS OTHER PARTS OF WORK: ☐ No ☐ Yes; explain _____

SAVINGS TO OWNER FOR ACCEPTING SUBSTITUTION:

PROPOSED SUBSTITUTION CHANGES CONTRACT TIME: ☐ No ☐ Yes [Add] [Deduct] _____ days.

SUPPORTING DATA ATTACHED: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

CONTINUE ON NEXT PAGE

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SUBSTITUTION REQUEST
(After the Bidding/Negotiating Phase—Continued)

The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

SUBMITTED BY: _____

SIGNED BY: _____

FIRM: _____

ADDRESS: _____

TELEPHONE: _____

☐ **Attachments**

A/E's REVIEW AND RECOMMENDATION:

☐ Approve Substitution—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Approve Substitution as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Reject Substitution—Use specified materials.

☐ Substitution Request received too late—Use specified materials.

SIGNED BY: **DATE:**

OWNER'S REVIEW AND ACTION:

☐ Substitution approved—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order

☐ Substitution approved as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order.

☐ Substitution rejected—Use specified materials.

SIGNED BY: **DATE:**

ADDITIONAL COMMENTS: ☐ **Contractor** ☐ **Subcontractor** ☐ **Supplier** ☐ **Manufacturer** ☐ **A/E**

CSI Form 13.1A (April 2022 version)

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SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation and general installation procedures.

B. Requirements for alterations work, including selective demolition.

C. Pre installation meetings.

D. Cutting and patching.

E. Surveying for laying out the Work.

F. Cleaning and protection.

G. Starting of systems and equipment.

H. Demonstration and instruction of Owner personnel.

I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

J. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary.

B. Section 01 30 00 - Administrative Requirements.

C. Section 01 40 00 - Quality Requirements.

D. Section 01 78 00 - Closeout Submittals.

E. Section 02 41 00 - Demolition.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

A. Reference Setion 01 30 00 - Administrative Requirements for additional Content.

B. Survey work: Provide name, address, cell phone number and email address of contact person for Surveyor**,** before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

D. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.

E. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 PROJECT CONDITIONS

A. Use of any explosives within this particular Project Site, is expressly prohibited.

B. Finish grade entire ExistingProject Site, as required to properly drain. Maintain all excavations free of water. Provide, operate, and maintain pumping equipment, as required.

C. Protect entire Project Site from any puddling or running water. Provide and install water barriers, as required to protect entire Project Site from erosion.

D. Perform dewatering activities, as required, for duration of entire project.

E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust proof barriers between construction areas and areas continuing to be occupied by Owner.

G. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
   2. Outdoors: Limit conduct of especially noisy exterior work to hours of 7: 00 a.m. to 4:00p.m., local time, unless stipulated otherwise by those Local Auhorities having Jurisdiction.

I. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
   1. Pest Control Service: Weekly treatments.

J. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

K. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

A. Reference Section 01 10 00 - Summary for additional Content.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and

conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean up of Work of separate sections.

H. After Owner occupancy of premises, coordinate access to Existing Poject Site for correction of any defective Work and or that Work not in accordance with Contract Documents, as required to eliminate disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

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

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

C. Product Substitution: For any proposed change in materials, submit request for substitution, as deleniated within Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Confirm all existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

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

3.02 PREPARATION

A. Thoroughly clean all substrate surfaces, prior to applying next material or substance.

B. Seal all cracks or openings within any substrate surfaces, prior to applying next material or substance.

C. Apply Manufacturer recommended substrate primer, sealer, or conditioner, prior to applying any new material or substance within contact or bond.

3.03 PRE INSTALLATION MEETINGS

A. When required within individual Specification Sections, convene a preinstallation meeting at Existing Project Site, prior to commencing any Work.

B. Require attendance of all parties directly affecting, or affected by Work.

C. Prepare agenda and preside at meeting:
   1. Thoroughly review all conditions of examination, preparation and installation procedures.
   2. Thoroughly review coordination with all related Work.

D. Record minutes and distribute copies within (2) Two Business dys, following saind Meeting, to all participants, including copies to Architect, Owner, and those affected by any decisions made during Meeting.

3.04 LAYING OUT, WORK

A. Contractor shall verify all locations of Survey Control Points, prior to starting any Work.

B. Contractor shall locate and protect entire Survey Control and all Reference Points.

C. Contractor shall control all datum for entire survey.

D. **Contractor shall protect all Survey Control Points, prior to starting any Work. Contractor shall preserve all permanent reference points during construction.**

E. **Contractor shall promptly report to Architect, loss or destruction of any reference points.**

F. **Contractor shall replace all dislocated Survey Control Points. Make no changes, without prior written notice to Architect.**

G. Utilize recognized engineering survey practices.

H. Contractor shall establish a minimum (3) three permanent bench marks within this particular Project Site, referenced to established control points. Record locations, with horizontal and vertical data upon project record documents.

I. Contractot shall establish all elevations, lines and levels. Contractot shall locate and lay out by instrumentation and or similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations and ground floor elevations.
   4. Controlling lines and levels required for mechanical and electrical trades.

J. Periodically verify layouts by same means.

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

L. On completion of foundation walls and major site improvements, Cotractor shall prepare a certified survey illustrating dimensions, locations, angles, and elevations of all Construcon Scope of Work.

3.05 GENERAL INSTALLATION, REQUIREMENTS

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

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

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

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

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

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

3.06 ALTERATIONS

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

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.
2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.

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

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

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    b. See Section 01 10 00 for other limitations on outages and required notifications.
    c. Provide temporary connections as required to maintain existing systems in service.
4. Verify that abandoned services serve only abandoned facilities.
5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect all existing Work intended to remain.
1. Prevent any movement of structure, provide shoring and bracing, as rquired by existing conditions.
2. Perform all necessary cutting, as required to accomplish all removals neatly and as delineated within Contract Documents.
3. Repair any adjacent construction and finishes, damaged during removal work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
4. Where a change of plane of 1/8 inch or more occurs in existing work.
5. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.

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

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

J. Thoroughly clean all existing systems and equipment.

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

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

M. Comply with all other applicable requirements.

3.07 CUTTING, PATCHING

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

B. See Alterations article above for additional requirements.

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

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

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

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

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

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

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.

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

3.08 PROGRESS CLEANING

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

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

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

3.09 PROTECTION, INSTALLED WORK

A. Protect all Work from damage.

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

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

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

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

F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.

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

H. Prohibit traffic from landscaped areas.

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

3.10 SYSTEM START UP

A. Coordinate within all requirements of Engineer of Record.

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

C. Notify Architect and Owner seven days prior to start-up of each item.

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

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

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

G. Execute start up under direct supervision of applicable Contractor personnel and Manufacturer's Representative, in full accordance with Manufacturers' instructions.

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

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

3.11 DEMONSTRATION, INSTRUCTION

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

E. Perform instruction in a classroom environment.

F. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

G. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

H. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.12 ADJUSTING

A. Adjust, repair all operating Products and Equipment, as required to ensure smooth and unhindered operation.

B. Testing, Adjusting, and Balancing of entire (HVAC) systems.

3.13 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

B. Use cleaning materials that are nonhazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean all debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains and drainage systems.

H. Thorougly clean Existing Project Site; sweep paved areas, rake clean landscaped surfaces.

I. Remove all waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

J. Thoroughly clean all Owner occupied areas of Work.

3.14 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect.
   2. Provide copies to Owner.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect immediately, whenever ork is considered ready for Architect's Substantial Completion Punhlist Inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in

accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Owner shall occupy entire building as outlined within Section 01 10 00- Summary.

F. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

G. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

H. Accompany Project Coordinator on Contractor's preliminary final inspection.

I. Notify Architect immediately whenever Work is considered finally complete and ready for Architect's Substantial Completion final Punchlist Inspection.

J. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.15 MAINTENANCE

A. Provide all Service and Maintenance of components, indicated within Contract Documents.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

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SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Manuals data.

C. Materials Transparency Manual.

D. Warranties and Bonds.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions and 00 73 00 - Supplementary Conditions.

B. Section 01 30 00 - Administrative Requirements.

C. Section 01 70 00 - Execution and Closeout Requirements.

D. Individual Product Sections.

1.03 SUBMITTALS

A. Project Record Documents: Submit detailed documents to Architect, **prior to** submission of Final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit (2) two copies of draft formats and outlines of contents, before start of Work.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within (7) seven business days, following acceptance.
   3. Submit (1) one copy of completed documents (21) twenty one business days prior to final inspection. Revise content of all document sets as required, prior to final submission.
   4. Submit (2) two sets of revised final documents, within (7) seven business days of final inspection.

C. Materials Transparency Manual:
   1. Compile and submit both a digital and a printed version of information disclosing materials content for interior finishes, furnishings (including workstations), built-in furniture. Meet IWBI (BS) requirements for format and content.

D. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within (7) seven business days of acceptance.
   2. Provide all other submittals within (7) business days of previously approved Project Substantial Completion Date and prior to submission of Final Application for Payment.
   3. For those items of Work, for which acceptance is delayed beyond Project Substantial Completion Date, submit within (7) seven business days following acceptance, while listing said date of acceptance as the start of applicable warranty period.

PART 2 PRODUCTS-"NOT APPLICABLE"...

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain within Project Site, (1) one set of following record documents, whil erecording any, all actual revisions to said Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and all other modifications to Contract.
   5. All previously reviewed Shop Drawings, Product data, and Product Samples.

6. All Manufacturer's instructions for assembly, installation, and or adjustments

B. Ensure all entries are complete and accurate, while enabling future reference by Owner.

C. Store all Record Documents separate from those documents used for Construction.

D. Record all information concurrent with Construction progress.

E. Specifications: Legibly mark, record, at each Product Section, detailed description of actual products installed, including the following:
   1. Manufacturer's Name Product Model and Number.
   2. Any previously approved Product Substitutions.
   3. Any revisions incorporated via Addenda.

F. Record Drawings and Shop Drawings: Legibly mark each item, as required to accurately torecord actual construction including:
   1. Measured depths of foundations in relation to finish floor datum.
   2. Measured horizontal and vertical locations of all underground utilities and appurtenances, referenced to all permanent surface improvements.
   3. Measured locations of all internal utilities and appurtenances concealed within construction, referenced to visible and accessible features of said Work.
   4. All Field changes of dimension and detail.
   5. Any details not delineated within Contract drawings.

3.02 OPERATION, MAINTENANCE DATA

A. Source Data: For each Product, list addresses, names and telephone numbers of all Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete all inapplicable information.

C. Drawings: Supplement Product data, as required to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION, MAINTENANCE DATA, MATERIALS, FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the Manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of said specific products.

3.04 OPERATION, MAINTENANCE DATA, EQUIPMENT, SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Detailed description of unit, system, and all component parts.
   2. Identify function, normal operating characteristics, and any limiting conditions, particular to this Project.
   3. Include all performance curves, including all engineering data and tests.

4. Complete nomenclature and model numbers for all replaceable parts.

B. Where additional instructions are required, beyond Manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of specific Products.

C. Panelboard Circuit Directories: Provide typed electrical service characteristics, controls, and communications.

D. Include detailed color coded wiring diagrams as previously installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions, particular to this Project Site.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
   1. Include HVAC outdoor and exhaust air damper calibration strategy.
      a. Include provisions which ensure that full closure of dampers can be achieved.
   2. Include Carbon Dioxide Monitoring Protocol.
   3. Include Carbon Monoxide Monitoring Protocol.
   4. Include Frost Mitigation Strategy for ventilation heat-recovery system.

G. Provide servicing and lubrication schedule, and list of lubricants required.

H. Include manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by controls manufacturer.

J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Provide control diagrams by controls manufacturer as installed.

L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

O. Include test and balancing reports.

P. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY, OPERATION, MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Product data, shop drawings, and other submittals.
      c. Operation and maintenance data.
      d. Field quality control data.
      e. Photocopies of warranties and bonds.
   4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

3.06 WARRANTIES, BONDS

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

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

C. Co-execute submittals when required.

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

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

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

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

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

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

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Building demolition excluding removal of hazardous materials and toxic substances.

B. Selective demolition of Existing Project Site structures, elements.

C. Selective demolition of existing building elements, as required for this particular Project Scope of Work.

D. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 00 31 00 - Available Project Information.

B. Section 01 10 00 - Summary.

C. Section 01 60 00 - Product Requirements.

D. Section 01 70 00 - Execution and Closeout Requirements.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additonal Content.

B. Site Plan: Indicate:
   1. All vegetation scheduled to be protected.
   2. All areas dfor temporary construction and field offices.
   3. All areas scheduled for temporary and permanent placement of removed materials.

C. Demolition Plan: Submit demolition plan as required by OSHA, those local Authorities having Jurisdiction and Owner.
   1. Indicate entire extent of demolition, removal sequencing, bracing, shoring,location and construction of barricade fences.
   2. Summary of all safety procedures.
   3. Detailed demolition firm qualifications.

D. Project Record Documents: Accurately record all actual locations of capped, active utilities and any subsurface construction.

1.05 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of Work indicated within Contract Documents.
   1. Minimum (15) Fifteen Years, documented experience.

PART 2 PRODUCTS - "NOT APPLICABLE"...

PART 3 EXECUTION

3.01 DEMOLITION

A. Remove only those portions of existing structures, as delineated within Contract Documents.

B. Remove paving and curbs, as required to accomplish this particular Scope of Work indicated within Contract Documents.

C. Break up paving within Existing Project Site, as required to permit natural moisture drainage, while leaving pieces no larger than (1) One square foot.

D. Within area of new construction, remove existing foundation walls and footings to minimum (36) Thirty Six inches below finished grade.

E. Outside area of new construction, remove existing foundation walls, footings to minimum (3) Thirty inches below finished grade.

F. Remove those concrete slabs on grade within site boundaries and as delineated within Contract Documents.

G. Break up concrete slabs on grade within Existing Project Site, as required to to permit natural moisture drainage, while leaving pieces no larger than (1) One square foot.

H. Remove all underground tanks.

I. Remove manholes and manhole covers, curb inlets and catch basins.

J. Remove existing fencesgates.

K. Remove all creosote treated wood utility poles.

L. Backfill all excavations, open pits, and any holes within ground areas, generated as result of removals, using Engineered specified fill compacted per Contract Documents.

3.02 GENERAL PROCEDURES, PROJECT CONDITIONS

A. Comply with all requirements delineated within Section 01 70 00 Execution and Closeout Requirements.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Use of explosives is not permitted.
   4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   5. Provide, erect, and maintain temporary barriers and security devices.
   6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   8. **Do not** close or obstruct any roadways or sidewalks without all applicable Permits from those authorities having jurisdiction.
   9. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
   10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from those authorities Having Jurisdiction and Owner.

D. Do not begin removal until all built elements to be salvaged or relocated have been removed.

E. Do not begin removal until all vegetation to be relocated has been removed and vegetation to remain has been protected from any damage.

F. Protect all existing structures and those existing elements scheduled to remain.
   1. Provide all bracing and shoring as required by this particular Scope of Work.
   2. Prevent any movement or settlement of any adjacent structures.
   3. Stop all Work immediately, if any adjacent structures appear to be damaged or in danger.

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

H. Hazardous Materials:
   1. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.
   2. Hazardous Materials: Comply with 29 CFR 1926 and state and those local authorities Having Jurisdiction.

I. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Comply fully with all local requirements, re: Construction Waste Management and Disposal Scope of Work.
   2. Dismantle existing construction and separate materials.
   3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point.

J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

K. Underground Storage Tanks: Remove and dispose of, as required by those Authorities having Jurisdiction.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of all disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

3.04 SELECTIVE DEMOLITION, ALTERATIONS

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

B. Separate areas in which demolition is being conducted from areas that remain occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of constructio, Reference Section 01 50 00 - Temporary Facilities and Controls, Drawings and Contract Documents for additional Content.

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

D. Remove existing work as indicated and required to accomplish this particular Scope of Work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction indicated.
   2. Remove those items delineated within Drawings.

E. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as required by this particular Scope
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Reference Section 01 10 00 - Summary for additional Content.
   4. Verify that abandoned services serve only abandoned facilities before removal.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect all existing work to remain.
   1. Prevent any movement of structure. Provide shoring and bracing as required.
   2. Perform all cutting, as required to accomplish all removal Work neatly and as delineated within Contract Documents.
   3. Replace all adjacent construction and finishes, damaged during Scope ofWork.

3.05 DEBRIS, WASTE REMOVAL

A. Remove all debris and refuse from Existing Project SIte.

B. Remove all materials, not scheduled to be reused within Existing Project Site

C. Leave entitre Existing Project Site in thoroughly clean condition, ready for this particular subsequent Scope of Work

D. Thoroughly clean all spillage and wind blown debris, entire Existing Project Site.

END OF SECTION

SECTION 03 01 00
MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thorough cleaning, all existing concrete surfaces.

B. Repair, replacement all shrinkage, settlement cracks.

C. Resurfacing those concrete surfaces displaying any damage, spalled areas.

D. Repair, replacement any deteriorated concrete.

E. Repair, replacement, concrete reinforcement.

F. Repair, replacement, strengthening of concrete via applied composite materials.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in place Concrete.

1.03 DEFINITIONS

A. Carbon Fiber Reinforced Polymer (CFRP): Composite material comprising a polymer matrix reinforced with carbon fiber cloth, mat, or strands.

1.04 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY " ...

A. ACI PRC-440.2 - Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures; 2017.

B. ACI SPEC-440.8 - Specification for Carbon and Glass Fiber-Reinforced Polymer (FRP) Materials Made by Wet Layup for External Strengthening of Concrete and Masonry Structures; 2013 (Reapproved 2023).

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

D. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2024.

E. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2022.

F. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement; 2024.

G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

H. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

I. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

J. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2024.

K. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

L. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2021.

M. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

N. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.

O. ASTM C928/C928M - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs; 2025.

P. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2024.

Q. ASTM C1708/C1708M - Standard Test Methods for Self-Leveling Mortars Containing Hydraulic Cements; 2023.

R. ASTM D3039/D3039M - Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials; 2017.

S. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

T. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

U. AWS D1.4/D1.4M - Structural Welding Code - Steel Reinforcing Bars; 2018, with Amendment (2020).

V. ICC-ES AC125 - Acceptance Criteria for Concrete and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber-Reinforced Polymer (FRP) Composite Systems; 2021, with Editorial Revision (2022).

W. ICC-ES AC178 - Acceptance Criteria for Inspection and Verification of Concrete and Reinforced and Unreinforced Masonry Strengthening Using Fiber-Reinforced Polymer (FRP) or Steel-Reinforced Polymer (SRP) Composite Systems; 2017, with Editorial Revision (2020).

X. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Scheduling: Perform any blast cleaning required, **only between hours of** 8: 00 a.m. and 4:00 p.m.

1.06 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.

C. Shop Drawings for Applied Composite Repairs: Provide shop drawings signed and sealed by Professional Engineer indicating:
   1. Repair location.
   2. Repair details.
   3. Fiber type, dimensions, number, thickness, and direction of layers.
   4. Installation sequence.
   5. Splice details.
   6. Joint and end details.
   7. Anchorage.
   8. Connections.

D. Manufacturer's instructions.

E. CFRP Manufacturer's instructions.

F. Field quality control submittals.

G. Field quality control submittals for CFRP.

H. Designer's qualification statement.

I. Manufacturer's qualification statement.

J. Cleaner's qualification statement.

K. Installer's qualification statement.

L. Welders' Qualification Statement: Welders' certificates in full accordance with AWS B2.1/B2.1M and no more than (8) Eight months before start of scheduled welding Work.

M. Project Record Documents: Accurately record actual locations of structural reinforcement repairs and type of repair.

1.07 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than (10) Ten years documented experience.

C. Cleaner Qualifications: Company specializing in, and with minimum (10) Ten years experience in that type cleaning specified.

D. Installer Qualifications: Company specializing in performing work of the type specified and with not less thatn (10) Ten years documented experience.

E. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.4/D1.4M and dated no more than (8) Eight months before start of scheduled welding Work.

1.08 MOCK UPS

A. Test each type maintenance procedure, as required, each type existing construction, as required to determine most appropriate procedures required this particular Project.

B. Crack Injection: Prepare (1) one sample, each type injection.

C. Horizontal Surface Repair: Total (12) Twelve square foot area, accurately representing each type repair required, this particular Project.

D. Vertical Surface Repair: Total (12) Twelve square foot area, accurately representing each type repair required, this particular Project.

E. Wherever color, texture matching is required, first prepare (3) Three foot square Product Sample, upon cementitious board, accurately representing construction, color, pattern and finish

F. Locate all mock up's as directed by Architect.

G. Repair, revise work mock Scope of Work, as required to acquire Owner, Architect approval.

H. **Mock ups may not remain as part of permanent Work, this particular Project.**

1.09 DELIVERY, STORAGE, HANDLING

A. **Fully comply with all** Manufacturers' written instructions, re handling of Products.

B. **Deliver all** polymer resin materials within original factory sealed containers, including Manufacturer's labels, fully intact, legible. Verify all Product nomenclature, Manufacturer's name, Product identification, batch number, date of manufacture, and shelf life, expiration date. **Do not** use any polymer resin materials that have exceeded shelf life.

C. **Store all** materials within covered, well ventilated area, according to Manufacturer's written storage instructions. Store all polymer resins, hardeners separate from all construction materials that may absorb any odors.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

A. Degreaser:
   1. Manufacturers:
      a. LATICRETE International, Inc; CITREX: www.laticrete.com.
      b. Nox-Crete, Inc; Bio-Clean Plus: www.nox-crete.com.
      c. SpecChem, LLC; Orange Peel-Citrus Cleaner: www.specchemllc.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Detergent: Non ionic detergent.

C. Acidic Cleaning Agent:
   1. Manufacturers:
      a. United Gilsonite Laboratories; DRYLOK® Concrete and Masonry Etch and Cleaner: www.ugl.com.
      b. Substitutions: Referene Section 01 60 00- Product Requirements fo additional Content.

2.02 CEMENTITIOUS PATCHING, REPAIR MATERIALS

A. Manufacturers:
   1. Adhesives Technology Corporation: www.atcepoxy.com.
   2. ARDEX Engineered Cements: www.ardexamericas.com.
   3. Euclid Chemical Company: www.euclidchemical.com.
   4. Mapei Corporation: www.mapei.com.
   5. The QUIKRETE Companies: www.quikrete.com.
   6. SpecChem, LLC: www.specchemllc.com.
   7. W. R. Meadows, Inc: www.wrmeadows.com.
   8. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Bonding Slurry: Water based latex admixture; fully comply with ASTM C1059/C1059M, combined with Portland cement and in full accordance with admixture Manufacturer's instructions.
   1. Admixture Manufacturers:
      a. Dayton Superior Corporation: www.daytonsuperior.com.
      b. Euclid Chemical Company; AKKRO-7T: www.euclidchemical.com.
      c. Mapei Corporation; Planibond 3C: www.mapei.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Cementitious Resurfacing Mortar: One or two component, factor mixed, polymer modified cementitious mortar designed for continuous thin coat application.
   1. In place material resistant to freezing conditions.
   2. Integral corrosion inhibitor.
   3. Recommended Thickness: Feather edge to 1/16 inch.
   4. Color: As selected by Architect from Manufacturer's full range of options.
   5. Manufacturers:
      a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com.
      b. Euclid Chemical Company; THIN TOP SUPREME: www.euclidchemical.com.
      c. Kaufman Products Inc; DressUp: www.kaufmanproducts.net.
      d. LATICRETE International, Inc; L&M DURACRETE: www.laticrete.com.
      e. Master Builders Solutions; MasterEmaco T 1061: www.master-builders-solutions.com/en-us.com.
      f. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

D. Cementitious Repair Mortar, Trowel Grade: One or Two component, factory mixed, polymer modified cementitious mortar.
   1. In place material resistant to freezing conditions.
   2. Mixed with water or latex type bonding agent in proportions as recommended by Manufacturer.
   3. Dry Material: Complies with ASTM C928/C928M.
   4. Integral corrosion inhibitor.
   5. Manufacturers:
      a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com.
      b. Dayton Superior Corporation: www.daytonsuperior.com.

c. Euclid Chemical Company; EXPRESS REPAIR: www.euclidchemical.com.
d. LATICRETE International, Inc; L&M DURACRETE: www.laticrete.com.
e. Master Builders Solutions; MasterEmaco T 1060: www.master-builders-solutions.com/en-us.com.
f. SpecChem, LLC; Duo Patch: www.specchemllc.com.
g. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Cementitious Repair Mortar, Form and Pour/Pump Grade: Flowable, one or two component, factory mixed, polymer modified cementitious mortar; in place material resistant to freezing conditions.
1. Mixed with water in proportions as recommended by Manufacturer.
2. Integral corrosion inhibitor.
3. Manufacturers:
a. Dayton Superior Corporation ; www.daytonsuperior.com.
b. Euclid Chemical Company; EUCOCRETE: www.euclidchemical.com.
c. Mapei Corporation; Planitop 15: www.mapei.com.
d. Master Builders Solutions; MasterEmaco S 440: www.master-builders-solutions.com/en-us.com.
e. Substitutions: Reference Sectio 01 60 00 - Product Requirements for additional Content.

F. Cementitious Pavement Repair Mortar: Fast hardening, flowable; composed of cement, sand, and additives; capable of setting in cold weather conditions without the aid of chloride or gypsum based accelerators; in place material resistant to freezing conditions.
1. Dry Material: Complies with ASTM C928/C928M.
2. Integral corrosion inhibitor.
3. Time To Open To Traffic: 6 hours, maximum.
4. Time to Top-Coating: 4 hours, maximum.
5. Manufacturers:
a. ARDEX Engineered Cements; ARDEX B 40: www.ardexamericas.com.
b. Dayton Superior Corporation: www.daytonsuperior.com.
c. Kaufman Products Inc; Duracrete II: www.kaufmanproducts.net.
d. Kaufman Products Inc; Duracrete II VOFT: www.kaufmanproducts.net.
e. LATICRETE International, Inc; L&M DURACRETE: www.laticrete.com.
f. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Cementitious Hydraulic Waterstop: Very fast setting, low slump, hand formable, and capable of stopping active water leaks; in-place material resistant to freezing conditions.
1. Manufacturers:
a. Dayton Superior Corporation: www.daytonsuperior.com.
b. Kaufman Products Inc; SurePlug - regular set: www.kaufmanproducts.net.
c. United Gilsonite Laboratories; FAST PLUG® Hydraulic Cement: www.ugl.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Exterior Self Leveling Concrete Topping: Portland cement based; suitable as wear surface topping in exterior and wet locations as well as underlayment for applied materials.
1. Compressive Strength: 4300 pounds per square inch, minimum, at 28 days, when tested in full accordance with ASTM C109/C109M, air cured.
2. Flexural Strength: 1000 pounds per square inch, minimum, at 28 days, when tested in full accordance with ASTM C348.
3. Manufacturers:
a. ARDEX Engineered Cements; ARDEX K301: www.ardexamericas.com.
b. Kaufman Products Inc; SureFlow 042: www.kaufmanproducts.net

c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Exterior Self Leveling Concrete Floor Topping:
   1. Minimum Compressive Strength at 28 Days, ASTM C1708/C1708M: 7,000 pounds per square inch.
   2. Manufacturers:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

J. Pre Blended Concrete Mix for Small Projects: Construction grade Portland cement uniformly blended with aggregates and other approved concrete ingredients, requiring only the addition of water.
   1. Compressive Strength: 4000 pounds per square inch, minimum, at 28 days, when tested in full accordance with ASTM C39/C39M.
   2. Manufacturers:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.03 EPOXY PATCHING, REPAIR MATERIALS

A. Manufacturers:
   1. Chase Construction Products: www.chasecorp.com.
   2. Dayton Superior Corporation: www.daytonsuperior.com..
   3. W. R. Meadows, Incwww.wrmeadows.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Epoxy Repair Mortar: Epoxy resin mixed with aggregate and other materials in accordance with Manufacturer's instructions for purpose intended; comply with pot life and workability limits.
   1. Manufacturers:
      a. Abatron; Abocrete Kit: www.abatron.com.
      b. ARDEX Engineered Cements; ARDEX BACA: www.ardexamericas.com.
      c. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000 or SpecPoxy 3000 FS: www.specchemllc.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Epoxy Injection Adhesive:
   1. Manufacturers:
      a. ChemCo Systems, Inc; KEMKO 068 - Lo Vis IR with KEMKO 141 - Quick Prime primer: www.chemcosystems.com.
      b. CTS Cement Manufacturing Corporation; Ultra-Fast Anchoring Adhesive: www.CTScement.com.
      c. Dayton Superior Corporation: www.daytonsuperior.com.
      d. Mapei Corporation; Epojet: www.mapei.com.
      e. SpecChem, LLC; SpecPoxy 1000; www.specchemllc.com.
      f. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Epoxy Bonding Adhesive: Non sag, two component, 100 percent solids; recommended by manufacturer for purpose and conditions under which used.
   1. Non Load Bearing Applications: ASTM C881/C881M, Type I, II, III, IV, or V, whichever appropriate to this particular Project..
   2. Load Bearing Applications: ASTM C881/C881M, Type IV or V, whichever is appropriate to application.
   3. Other Applications: ASTM C881/C881M, Type as appropriate to application.
   4. Manufacturers:
      a. Adhesives Technology Corporation; CRACKBOND 2100 MV: www.atcepoxy.com.

b. ARDEX Engineered Cements; ARDEX BACA: www.ardexamericas.com.
c. Dayton Superior Corporation: www.daytonsuperior.com
d. Euclid Chemical Company; DURAL FAST SET LV: www.euclidchemical.com.
e. Substitutions: Reference Section 0160 00 - Product Requirements for additional Content.

E. Epoxy Grout: Two component, 100 percent solids; recommended by Manufacturer for purpose and conditions under which used.
1. Non Load Bearing Applications: ASTM C881/C881M, Type I, II, III, IV, or V, whichever is appropriate to this particular application.
2. Load Bearing Applications: ASTM C881/C881M, Type IV or V, whichever is appropriate to this particular application.
3. Other Applications: ASTM C881/C881M, Type as appropriate to this particular application.
4. Manufacturers:
a. Adhesives Technology Corporation; ACCU-CHOCK: www.atcepoxy.com.
b. Substitutions: Referene Section 01 60 00 - Product Requirements for additional Content.

2.04 URETHANE PATCHING, REPAIR MATERIALS

A. Manufacturers:
1. Adhesives Technology Corporation: www.atcepoxy.com.
2. LATICRETE International, Inc: www.laticrete.com.
3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Polyurea Modified Repair Gel: Rapid setting, two component, 100 percent solids; use with or without aggregate to repair cracks and spalls in concrete surfaces.
1. Manufacturers:
a. Adhesives Technology Corporation; CRACKBOND CSR: www.atcepoxy.com
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Polyurethane Repair Gel: Rapid setting, two component; use with or without aggregate to repair cracks and spalls in concrete surfaces.
1. Manufacturers:
a. ARDEX Engineered Cements; ARDEX ArdiFix: www.ardexamericas.com.
b. Dayton Superior Corporation: www.daytonsuperior.com.
c. Euclid Chemical Company; EUCO QWIKstitch: www.euclidchemical.com.
d. Rhino Products USA www.rhinocarbonfiber.com.
e. Substitutions: Reference Section 01 670 00 - Product Requirements for additional Content.

D. Hybrid Urethane Patching Material: Rapid setting, two component, 100 percent solids; for rapid joint repair and crack filling where no future slab movement is anticipated.
1. Manufacturers:
a. Adhesives Technology Corporation; CRACKBOND CSR: www.atcepoxy.com.
b. Curecrete Distribution, Inc; CreteFill Spall Repair: www.curecrete.com.
c. LATICRETE International, Inc; SPARTACOTE FAST FIX: www.laticrete.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Polyurethane Waterstop: Hydrophobic or hydrophilic, single component, flexible polyurethane designed to stop water infiltration into concrete structures.
1. Manufacturers:
a. Adhesives Technology Corporation; CRACKBOND POLYBLOC: www.atcepoxy.com.

b. Substitutions: Reference Section 01 0 00 - Product Requirements for additional Content.

2.05 CARBON FIBER REINFORCED POLYMER PATCHING, REPAIR MATERIALS

A. Manufacturers:
1. Fortress Stabilization Systems: www.fortressstabilization.com
2. Master Builders Solutionswww.master-builders-solutions.com.
3. Rhino Products USA, Inc; RCF Saturant-Adhesive Epoxy: www.rhinocarbonfiber.com.
4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. CFRP Systems, General:
1. Design Criteria: Design CFRP system in full accordance with ACI PRC-440.2 as required to provide necessary strengthening to concrete.
2. CFRP System Description:
a. Wet Layup FRP System: Dry fiber sheets or fabrics impregnated on site with saturating resin, adhered to concrete surfaces, and cured in place.
b. Preimpregnated FRP System: Fiber sheets or fabrics with factory applied saturating resin adhered to concrete with or without additional resin application. Preimpregnated systems usually require heat curing.
c. Precured FRP System: Composite shapes plates, strips, ribbons, and bars configured as an open mesh grid or solid laminate manufactured in system supplier's facility, shipped to site, and bonded to concrete surfaces with adhesive.

C. CFRP System Design Criteria:
1. Wet Layup CFRP System: Comply with ACI SPEC-440.8.
2. Comply with ICC-ES AC125 Acceptance Criteria.
3. Comply with ICC-ES AC178 Acceptance Criteria.
4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A, when tested in full accordance with ASTM E84.

D. CFRP Materials:
1. Liquid Epoxy Adhesive: Two component, 100 percent solids, moisture-tolerant, low to medium viscosity, high strength, low modulus, multipurpose; comply with ACI SPEC-440.8; comply with ASTM C881/C881M for Types I, II, IV, and V, Grade 2, Classes B and C. Uses include:
2. Unidirectional and Bidirectional Carbon Fiber: Comply with ACI SPEC-440.8.
3. Carbon Fiber Stitch: Comply with ACI SPEC-440.8. Fabricated unidirectional carbon fiber reinforcements with flared ends that are recessed into concrete material with epoxy paste to span and reinforce cracks.
4. Mixes:
a. Mix resins and adhesives in accordance with CFRP system Manufacturer's written instructions.
b. Mix each batch sufficiently small that mixture can be used within the mixture's pot life. Do not use mixture older than pot life defined by CFRP system Manufacturer.

E. CFRP Accessories:
1. Polyurethane Foam: Two component, low viscosity, self expanding; used for filling cracks and voids.
2. Epoxy Injection Adhesive: For bonding cracked surfaces.
3. Epoxy Paste: Two component, 100 percent solids, moisture insensitive, high strength, high modulus, multipurpose liquid epoxy gel adhesive; comply with ASTM C881/C881M for Types I, II, IV, and V, Grade 3, Classes B and C.
4. Primer: Enhances bond strength of CFRP system. Wet lay up systems typically require primers.
5. Anchors: As required by CFRP systems Manufacturer and delineated within Contract Documents.

2.06 ACCESSORIES

A. Anchoring Adhesive: Self leveling or non sag as applicable.
   1. Self Leveling Polyester-Based Products:
      a. W. R. Meadows, Inc; Poly-Grip: www.wrmeadows.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Self Leveling Epoxy Products:
      a. Abatron; BestBond Crack Repair: www.abatron.com.
      b. Euclid Chemical Company; DURAL FAST SET LV: www.euclidchemical.com.
      c. SpecChem, LLC; SpecPoxy 2000; www.specchemllc.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   3. Non Sag Epoxy Products:
      a. Adhesives Technology Corporation; ULTRABOND EPX-3CC: www.atcepoxy.com/#sle.
      b. Dayton Superior Corporation:www.daytonsuperior.com.
      c. Rhino Products USA, Inc: www.rhinocarbonfiber.com.
      d. W. R. Meadows, Inc; Rezi-Weld Gel Paste or Rezi-Weld Gel Paste State: www.wrmeadows.com.
      e. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   4. Hybrid Epoxy Resin Base Products: Two component, 100 percent solids, moisture insensitive, high strength, high modulus, multipurpose liquid epoxy gel adhesive; comply with ASTM C881/C881M for Types I, II, IV, and V, Grade 3, Classes A, B, and C.
      a. Adhesives Technology Corporation; ULTRABOND HYB-2CC: www.atcepoxy.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Portland Cement: ASTM C150/C150M, Type I, grey.

C. Sand: ASTM C33/C33M or ASTM C404; uniformly graded, clean.

D. Water: Clean and potable.

E. Reinforcing Steel: ASTM A615/A615M Grade 40 (40,000 psi) billet steel deformed bars, unfinished.

F. Reinforcing Steel: Deformed bars, ASTM A996/A996M Grade 40 (280), Type A.
   1. Galvanized in full accordance with ASTM A767/A767M, Class I.

G. Corrosion Inhibitors: (1) One component polymer based, anti corrosion coating for reinforcing steel.
   1. Products:
      a. Mapei Corporation; Mapefer 1K: www.mapei.com/#sle.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Cathodic Protection
   1. Metal Anodes: Sacrificial metal accessory connected to steel reinforcement to provide corrosion protection through galvanic reaction.
      a. Products:
         1) Mapei Corporation; Mapeshield I: www.mapei.com.
         2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** surfaces are ready to receive Work, this Section prior to commencing same.

B. Beginning installation shall represent acceptance of substrate.

3.02 PREPARATION

A. Surface Preparation for CFRP Systems:
   1. Repair cracks according to CFRP manufacturer's written instructions.
   2. Cleaning: Remove loose and unsound materials. Remove contaminants that would inhibit bond, such as laitance, dust, dirt, oil, curing compound, existing paint or coatings, efflorescence, and other matter that could interfere with bond of CFRP system concrete surfaces.
   3. Concrete: Roughen surface according to CFRP Manufacturer's written instructions.
   4. Apply CFRP system within (72) Seventy Two hours of surface preparation.

3.03 CLEANING EXISTING CONCRETE

A. Provide enclosures, barricades, and other temporary construction as required to protect adjacent work from damage.

B. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.

C. The following are acceptable cleaning methods, in order from gentlest to less gentle:
   1. Water washing using low-pressure, maximum of 100 psi, and, if necessary, brushes with natural or synthetic bristles.
   2. Adding detergent to washing water; with final water rinse to remove residual detergent.
   3. Steam generated low-pressure hot water washing.
   4. Alkaline cleaning agent applied for the least amount of time that is effective, followed by slight acid rinse and water rinse.
   5. Acidic cleaning agent applied for the least amount of time that is effective, followed by water rinse. Test acidic cleaning agents on mock up surfaces prior to use.
   6. Abrasive blasting: Use only abrasive media that have been proven not to damage concrete by testing on mock-up.

D. **Do not** use any of the following cleaning methods;
   1. Brushes with wire bristles, grinding with abrasives, solvents, hydrochloric or muriatic acid, sodium hydroxide, caustic soda, or lye.
   2. Soap or detergent that is not non ionic.
   3. Water washing pressure to over (100) One Hundred psi.
   4. Steam cleaning or steam generated hot water washing.
   5. Alkaline cleaning agents.

3.04 CRACK REPAIR USING, EPOXY ADHESIVE INJECTION

A. Repair, replace all cracks, as required, this particular Project.

B. Fully follow epoxy adhesive Manufacturer's written installation instructions.

C. Provide temporary entry ports spaced to accomplish movement of fluids between ports; no deeper than the depth of the crack to be filled or port size diameter no greater than the thickness of the crack. Provide temporary seal at concrete surface to prevent leakage of adhesive.

D. Inject adhesive into ports under pressure using equipment appropriate for particular application.

E. Remove temporary seal and all excess adhesive.

F. Thoroughly clean all surfaces adjacent repair and blend finish.

3.05 CONCRETE SURFACE REPAIR, USING CEMENTITIOUS MATERIALS

A. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.

B. Follow bonding agent and repair mortar manufacturer's written installation instructions.

C. Apply coating of bonding agent to entire concrete surface to be repaired.

D. Trowel finish, as required to match all adjacent surfaces.

E. Damp cure for minimum (5) Five calendar days.

3.06 CONCRETE REPAIR, CFRP MATERIALS

A. Wet Layup, Dry Layup, and Preimpregnated Systems:
   1. Install in accordance with Manufacturer's written instructions.
   2. Apply saturating resin to full saturation of fibers according to Manufacturer's written instructions.
   3. Remove air trapped between layers before resin sets.
   4. Place successive layers of saturating resin and fiber materials before complete cure of previous layer of resin.
   5. Handle sheet and fabric materials to maintain the fiber straightness and orientation. Remove and repair kinks, folds, or other forms of waviness.

B. Precured Systems:
   1. Install in full accordance with Manufacturer's written instructions.
   2. Apply adhesives evenly where precured systems are to be placed.
   3. Apply adhesives according to CFRP Manufacturer's written instructions.
   4. Remove any air trapped between layers, before adhesive sets.

C. Carbon Fiber Stitches:
   1. Saw cut thin slit in concrete perpendicular to crack. Drill small diameter hole at each end.
   2. Fill cut with epoxy paste. Insert carbon fiber stitch into cut.

D. Curing:
   1. Inspect the primer and CFRP resin to ensure proper cure according to Manufacturer's written instructions.
   2. **Do not** modify resin chemistry in field.

E. Surface Finish, Coating Application:
   1. Apply paints and coatings compatible with CFRP strengthening system prior to final resin cure for best results.
   2. After CFRP resin has cured, coatings may be applied after a light dust mechanical abrasion to remove the gloss from resin.
   3. Remove dust and residue from all surfaces by flushing with clean water before applying coating.
   4. **Ensure all** surfaces are fully dry, prior to applying any finish coating.

F. **Do not** bridge over existing control joints.

3.07 FIELD QUALITY CONTROL

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Independent testing agency, per Section 01 40 00- Quality Requirements.
   1. Test all concrete for calcium chloride content during execution of Work.
   2. Field Quality Control for CFRP:
      a. Inspect installation and test for full compliance with ICC-ES AC178.
      b. Inspect for voids, bubbles, and any delaminations via performing visual and acoustic tap test of layered surface, followinf (24) Twenty Four hours, initial resin saturant cure.
      c. Test for any material properties, CFRP in fullaccordance with ASTM D3039/D3039M.
      d. Coordination with all Other Tests, Inspections: Provide access; accommodate all tests, inspections.
      e. Nonconforming Work: Repair any defective Work, immediately following mimimum cure time, CFRP laminates.

END OF SECTION

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SECTION 03 05 16
UNDERSLAB VAPOR BARRIER - STEGO

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet vapor barrier under concrete slabs on grade.

1.02 RELATED REQUIREMENTS

A. Reference Section 03 10 00 - Concrete Formng and Accessories for additional Content.

B. Reference Section 03 20 00 - Concrete Reinforcing for additional Content.

C. Reference Section 03 30 00 - Cast in Place Concrete for additional Content.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2024.

B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Submit Manufacturer's detailed Product Data, particular to this Project.

C. Test Data: Submit detailed Test Repors,confirming full compliance with Contract Documents.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurtely represent construction and accessories.

E. Manufacturer's Installation Instructions: Proviede Manufacturer's written installation procedures coordinated with all adjacent construction, and particular to this Project.

PART 2 PRODUCTS

2.01 MATERIALS

A. Underslab Vapor Barrier:
   1. Water Vapor Permeance: Not more than 0.010 perms, maximum.
   2. Complying with ASTM E1745 Class A.
   3. Minimum thickness: 15 mils.
   4. Basis of Design:
      a. Stego Industries LLC; Stego Wrap Vapor Barrier (15-mil): www.stegoindustries.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

B. Accessory Products: Vapor barrier manufacturer's recommended tape, adhesive, mastic, etc., for sealing seams and penetrations in vapor barrier.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all surfaces, over which vapor barrier is scheduled to be installed, are complete and ready for Work of this Section, prior to beginning installation process.

3.02 INSTALLATION

A. Install all vapor barrier in full accordance with Manufacturer's instructions and ASTM E1643.

B. Install all vapor barrier under interior slabs on grade; lap sheet over footings and seal to foundation walls.

C. Lap joints minimum (8) eight inches.

D. Seal all joints, seams and penetrations, as required to make watertight, only with Manufacturer's recommended Products.

E. No penetrations through vapor barrier allowed, except for reinforcing steel and permanent utilities.

F. Replace all damaged Work, this Section, prior to covering with any other materials.

END OF SECTION

SECTION 031000
CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Form-facing material for cast-in-place concrete.

1.03 DEFINITIONS

A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.

B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.04 ACTION SUBMITTALS

A. Product Data: For each of the following:

1. Exposed surface form-facing material.
2. Form ties.
3. Waterstops.
4. Form-release agent.

B. Samples:

1. For waterstops.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing and inspection agency.

B. Field quality-control reports.

1.06 QUALITY ASSURANCE

A. Testing and Inspection Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

A. As-Cast Surface Form-Facing Material:

1. Provide continuous, true, and smooth concrete surfaces.
2. Furnish in largest practicable sizes to minimize number of joints.
3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete, and as follows:
    a. Plywood, metal, or other approved panel materials.

2.02 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

2.03 RELATED MATERIALS

A. Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

B. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
2. Form release agent for form liners shall be acceptable to form liner manufacturer.

F. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

PART 3 - EXECUTION

3.01 INSTALLATION OF FORMWORK

A. Comply with ACI 301.

B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes.

C. Limit concrete surface irregularities as follows:

1. Surface Finish-2.0: ACI 117 Class B, 1/4 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

1. Minimize joints.

E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.

1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
3. Install keyways, reglets, recesses, and other accessories, for easy removal.

F. Do not use rust-stained, steel, form-facing material.

G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.

1. Provide and secure units to support screed strips
2. Use strike-off templates or compacting-type screeds.

H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.

1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
2. Locate temporary openings in forms at inconspicuous locations.

I. Chamfer exterior corners and edges of permanently exposed concrete.

J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.

K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.
1. Determine sizes and locations from trades providing such items.
2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.

L. Construction and Movement Joints:
1. Construct joints true to line with faces perpendicular to surface plane of concrete.
2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
3. Place joints perpendicular to main reinforcement.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicated on Drawings.
a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.
1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.

N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.
1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
5. Clean embedded items immediately prior to concrete placement.

3.03 INSTALLATION OF WATERSTOPS

A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated on Drawings, according to manufacturer's written instructions, by adhesive bonding, mechanically fastening, and firmly pressing into place.

1. Install in longest lengths practicable.
2. Locate waterstops in center of joint unless otherwise indicated on Drawings.
3. Protect exposed waterstops during progress of the Work.

3.04 REMOVING AND REUSING FORMS

A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 72 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved[at least 70 percent of] its 28-day design compressive strength.

B. Clean and repair surfaces of forms to be reused in the Work.

1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
2. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.

1. Align and secure joints to avoid offsets.
2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.05 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.
2. Bar supports.
3. Mechanical splice couplers.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of the Architect.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For testing and inspection agency.

B. Welding certificates.

1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M

C. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:
    a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
2. Mechanical splice couplers.

D. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1. Store reinforcement to avoid contact with earth.

PART 2 - PRODUCTS

2.01 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

B. Low-Alloy Steel Reinforcing Bars: ASTM A706/A706M, deformed.

C. Headed-Steel Reinforcing Bars: ASTM A970/A970M.

D. Steel Bar Mats: ASTM A184/A184M, fabricated from ASTM A615/A615M, Grade 60, deformed bars, assembled with clips.

E. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.02 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.

C. Mechanical Splice Couplers: ACI 318 Type 1, same material of reinforcing bar being spliced; tension-compression type.

D. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Plain.

2.03 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.01 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.

2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.02 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.

2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

D. Provide concrete coverage in accordance with ACI 318.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Splices: Lap splices as indicated on Drawings.

1. Bars indicated to be continuous, and all vertical bars shall be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.
2. Stagger splices in accordance with ACI 318.
3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.
4. Weld reinforcing bars in accordance with AWS D1.4/D 1.4M, where indicated on Drawings.

G. Install welded-wire reinforcement in longest practicable lengths.

1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."
    a. For reinforcement less than W4.0 or D4.0, continuous support spacing shall not exceed 12 inches.
2. Lap edges and ends of adjoining sheets at least one wire spacing plus 2 inches for plain wire and 8 inches for deformed wire.
3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.
4. Lace overlaps with wire.

3.03 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement.
2. Continue reinforcement across construction joints unless otherwise indicated.
3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.04 INSTALLATION TOLERANCES

A. Comply with ACI 117.

3.05 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel-reinforcement placement.
2. Steel-reinforcement mechanical splice couplers.
3. Steel-reinforcement welding.

END OF SECTION

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.

1.03 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.04 ACTION SUBMITTALS

A. Product Data: For each of the following.

1. Portland cement.
2. Fly ash.
3. Aggregates.
4. Admixtures:
    a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
5. Vapor retarders.
6. Curing materials.
7. Joint fillers.
8. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Location within Project
4. Durability exposure class.
5. Maximum w/cm.
6. Slump limit.
7. Air content.

8. Nominal maximum aggregate size.
9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Intended placement method.
11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings:
1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
a. Location of construction joints is subject to approval of the Architect.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:
1. Installer: Include copies of applicable ACI certificates.
2. Ready-mixed concrete manufacturer.
3. Testing agency: Include copies of applicable ACI certificates.

B. Material Certificates: For each of the following, signed by manufacturers:
1. Cementitious materials.
2. Admixtures.
3. Curing compounds.
4. Bonding agents.
5. Adhesives.
6. Vapor retarders.
7. Semirigid joint filler.
8. Joint-filler strips.
9. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:
1. Portland cement.
2. Fly ash.
3. Aggregates.
4. Admixtures:

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

E. Field quality-control reports.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician.
1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.08 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

3. Do not use frozen materials or materials containing ice or snow.

4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.

5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.01 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.02 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.

2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.

3. Obtain aggregate from single source.

4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II, gray.

2. Fly Ash: ASTM C618, Class C or F.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Alkali-Silica Reaction: Comply with one of the following:

a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.

b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.

c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. for moderately reactive aggregate or 3 lb./cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.

2. Maximum Coarse-Aggregate Size: 1 inch nominal.

3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.

2. Retarding Admixture: ASTM C494/C494M, Type B.

3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

F. Water and Water Used to Make Ice: ASTM C94/C94M, potable

2.03 VAPOR RETARDERS

A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.04 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

1. Color:

a. Ambient Temperature Below 50 deg F: Black.

b. Ambient Temperature between 50 deg F and 85 deg F: Any color.

c. Ambient Temperature Above 85 deg F: White.

D. Water: Potable or complying with ASTM C1602/C1602M.

E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

2.05 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

B. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.06 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C109/C109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C109/C109M.

2.07 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Other Pozzolans: 25 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete and concrete with a w/cm below 0.50.

2.08 CONCRETE MIXTURES

A. Class A: Normal-weight concrete used for footings.
1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
a. 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size.

B. Class B: Normal-weight concrete used for interior slabs-on-ground.
1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

C. Class C: Normal-weight concrete used for interior suspended slabs.
1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

2.09 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M, and furnish batch ticket information.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:
1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.03 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.04 INSTALLATION OF VAPOR RETARDER

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
4. Lap joints 6 inches and seal with manufacturer's recommended tape.
5. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
6. Protect vapor retarder during placement of reinforcement and concrete.
    a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.

3.05 JOINTS

A. Construct joints true to line, with faces perpendicular to surface plane of concrete.

B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.

1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
2. Place joints perpendicular to main reinforcement.
    a. Continue reinforcement across construction joints unless otherwise indicated.
    b. Do not continue reinforcement through sides of strip placements of floors and slabs.
3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.

6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.

D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.

2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.

2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.

2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.
2. Deposit concrete to avoid segregation.
3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.
    a. Do not use vibrators to transport concrete inside forms.
    b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
    c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
    d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete floors and slabs in a checkerboard sequence.
2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Maintain reinforcement in position on chairs during concrete placement.
4. Screed slab surfaces with a straightedge and strike off to correct elevations.
5. Level concrete, cut high areas, and fill low areas.
6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.07 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
    a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
    b. Remove projections larger than 1 inch.
    c. Tie holes do not require patching.
    d. Surface Tolerance: ACI 117 Class D.
    e. Apply to concrete surfaces not exposed to public view.
2. ACI 301 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
    a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
    b. Remove projections larger than 1/4 inch.
    c. Patch tie holes.

d. Surface Tolerance: ACI 117 Class B.

e. Locations: Apply to concrete surfaces exposed to public view,.

B. Rubbed Finish: Apply the following to as cast surface finishes where indicated on Drawings:

1. Smooth-Rubbed Finish:

a. Perform no later than one day after form removal.

b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.

2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.08 FINISHING FLOORS AND SLABS

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.

2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.

3. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.

2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.

3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

4. Do not add water to concrete surface.

5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.

6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:

a. Slabs on Ground:

1) Specified overall values of flatness, F_F 35; and of levelness, F_L 25; with minimum local values of flatness, F_F 24; and of levelness, F_L 17.

b. Suspended Slabs:

1) Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.

3.09 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.
    a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    b. Cast anchor-bolt insert into bases.
    c. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items.

1. Cast-in inserts and accessories, as shown on Drawings.
2. Screed, tamp, and trowel finish concrete surfaces.

3.10 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. If forms remain during curing period, moist cure after loosening forms.
3. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
    a. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
    b. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
        1) Recoat areas subject to heavy rainfall within three hours after initial application.
        2) Maintain continuity of coating and repair damage during curing period.

C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
1. Begin curing immediately after finishing concrete.
2. Interior Concrete Floors:
    a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
        1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
            a) Lap edges and ends of absorptive cover not less than 12-inches.
            b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
        2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.
            a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
            b) Cure for not less than seven days.
        3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
            a) Water.
            b) Continuous water-fog spray.
    b. Floors to Receive Curing Compound:
        1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
        2) Recoat areas subjected to heavy rainfall within three hours after initial application.
        3) Maintain continuity of coating, and repair damage during curing period.
        4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing

compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

3.11 TOLERANCES

A. Conform to ACI 117.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.

1. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect.
2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
    a. Limit cut depth to 3/4 inch.
    b. Make edges of cuts perpendicular to concrete surface.
    c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
    d. Fill and compact with patching mortar before bonding agent has dried.
    e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
    a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
    b. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces:

1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
    a. Correct low and high areas.
    b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
3. After concrete has cured at least 14 days, correct high areas by grinding.
4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.
    a. Finish repaired areas to blend into adjacent concrete.
5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
    a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
    b. Feather edges to match adjacent floor elevations.
6. Correct other low areas scheduled to remain exposed with repair topping.
    a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
    b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
    a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
    b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
    c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
    d. Place, compact, and finish to blend with adjacent finished concrete.
    e. Cure in same manner as adjacent concrete.
8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.
    a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
    b. Dampen cleaned concrete surfaces and apply bonding agent.
    c. Place patching mortar before bonding agent has dried.
    d. Compact patching mortar and finish to match adjacent concrete.
    e. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.

2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.

3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:

1) Project name.

2) Name of testing agency.

3) Names and certification numbers of field and laboratory technicians performing inspections and testing.

4) Name of concrete manufacturer.

5) Date and time of inspection, sampling, and field testing.

6) Date and time of concrete placement.

7) Location in Work of concrete represented by samples.

8) Date and time sample was obtained.

9) Truck and batch ticket numbers.

10) Design compressive strength at 28 days.

11) Concrete mixture designation, proportions, and materials.

12) Field test results.

13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.

14) Type of fracture and compressive break strengths at seven days and 28 days.

C. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

D. Inspections:

1. Headed bolts and studs.

2. Verification of use of required design mixture.

3. Concrete placement, including conveying and depositing.

4. Curing procedures and maintenance of curing temperature.

E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143/C143M:
    a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete;.
    a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064/C1064M:
    a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C31/C31M:
    a. Cast and laboratory cure two sets of two 6-inch by 12-inch cylinder specimens for each composite sample. If using 4-inch by 8-inch cylinders, two sets of three cylinders shall be used.
6. Compressive-Strength Tests: ASTM C39/C39M.
    a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days. If using four-inch cylinders, tests shall include three specimens.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated. If using four-inch cylinders, average will be computed from a set of three specimens.
7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
10. Additional Tests:

a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.

1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 section 1.6.6.3.

11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

F. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 24 hours of completion of floor finishing and promptly report test results to Architect.

3.15 PROTECTION

A. Protect concrete surfaces as follows:

1. Protect from petroleum stains.
2. Diaper hydraulic equipment used over concrete surfaces.
3. Prohibit vehicles from interior concrete slabs.
4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION

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SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface treatments for concrete floors and slabs.

B. Liquid densifiers and hardeners.

C. Dry shake hardeners.

D. Concrete stains and dyes.

E. Clear coatings.

F. Color coatings.

G. Clear penetrating sealers.

H. Polished concrete.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all Work with concrete floor placement, concrete floor curing.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

C. Product Data: Manufacturer's published data and installation instructions for concrete polishing system and finishing products, including manufacturer's installation instructions, information on compatibility of different products, and limitations.

D. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

E. Warranty Documentation: Manufacturer warranty; ensure that forms have been completed in Owner's name and registered with Manufacturer.

F. Specimen Warranty: Manufacturer's detailed Warranty documentation, particular to this Project.

1.05 QUALITY ASSURANCE

A. For slabs indicated to receive concrete polishing system, **do not** proceed with concrete polishing unless manufacturer's representative and specialized equipment is present for every day of placement.

1.06 MOCK UP

A. For coatings, construct mock up area under conditions similar to those that will exist during application, with coatings applied.

B. Mock up Size: (12) Twelve feet square

C. Location, as directed by Architect

D. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. Deliver all materials within Manufacturer's sealed packaging, including written application instructions.

1.08 FIELD CONDITIONS

A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.

B. **Do not** finish floors until interior heating system is operational.

C. Maintain ambient temperature of 50 degrees F minimum.

1.09 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Replace all defective Work.

C. Manufacturer Warranty: Provide (10) Ten year Manufacturer Warranty, to commence upon previously established Project Substantial Completion Date.

D. Installer Warranty: Provide (5) Five year Installer Warranty, to commence upon previously established Project Substantial Completion Date.

E. Finish Warranty: Provide (10) Ten year Manufacturer Finish Warranty, to commence upon previously established Project Substantial Completion Date.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH, APPLICATIONS

A. Unless otherwise indicated, all concrete floors are to be finished using liquid densifier/hardener.

B. Troweling Aid, Densifier and Curing Agent:

C. Liquid Densifier and Hardener:

D. Dry Shake Hardener:

E. Concrete Stain:

F. Color Coatings:

G. Penetrating Clear Sealer:

H. Clear Coating:

I. Slip Resistant Coating:

J. Polished Finish:

2.02 SURFACE TREATMENTS

A. Troweling Aid, Densifier and Curing Agent: Liquid reactive colloidal silica based topical treatment, spray applied to wet concrete and floated troweled into surface.
   1. Product:
      a. Forta Corporation: www.forta-ferro.com
      b. Penetron; Peneseal FH-PS: www.penetron.com.
      c. Solomon Colors; Solomon Colors Lythic Day1: www.solomoncolors.com.
      d. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

2.03 DENSIFIERS, HARDENERS

A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores, hardening, and dustproofing.
   1. Composition: Lithium silicate.
   2. Products:
      a. Adhesives Technology Corporation; CONVERGENT Pentra-Pel (SI): www.atcepoxy.com.
      b. Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
      c. Concrete Sealers USA: www.concretesealersusa.com.
      d. Dayton Superior Corporation: www.daytonsuperior.com.
      e. Euclid Chemical Company; ULTRASIL LI+: www.euclidchemical.com.

f. Green Umbrella Architectural Concrete Systems; DryShield: www.greenumbrellasystems.com.
g. Green Umbrella Architectural Concrete Systems; Shield and Enhance: www.greenumbrellasystems.com.
h. Hi-Tech Systems; ConDense LS: www.hitechpolyurea.com.
i. Kaufman Products Inc; SureHard LS: www.kaufmanproducts.com.
j. L&M Construction Chemicals, Inc; LiON HARD: www.lmcc.com.
k. Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
l. PROSOCO, Inc; Consolideck LS/CS: www.prosoco.com/consolideck.com
m. PROSOCO, Inc; Consolideck LS: www.prosoco.com/consolideck.com.
n. PROSOCO, Inc; ColorHard used with Consolideck LS or LS/CS: www.prosoco.com/consolideck.com
o. Sinak Corporation; LithoHard: www.sinak.com.
p. SpecChem, LLC; LithSeal SC: www.specchemllc.com.
q. W. R. Meadows, Inc; Liqui-Hard Ultra: www.wrmeadows.com.
r. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

3. Composition: Sodium silicate.
   a. Products:
      1) Concrete Sealers USA: www.concretesealersusa.com.
      2) Curecrete Distribution, Inc; Ashford Formula: www.curecrete.com.
      3) Euclid Chemical Company; EUCOSIL: www.euclidchemical.com.
      4) Euclid Chemical Company; EUCO DIAMOND HARD: www.euclidchemical.com.
      5) FullForce Solutions; DuraForce(t): www.fullforcesolutions.us/duraforce.com.
      6) Hi-Tech Systems; ConDense SS: www.hitechpolyurea.com.
      7) Kaufman Products Inc; Silicure: www.kaufmanproducts.com.
      8) Kaufman Products Inc; SureHard: www.kaufmanproducts.com.
      9) L&M Construction Chemicals, Inc; SEAL HARD: www.lmcc.com.
      10) Mapei Corporation; Mapecrete Hard SB: www.mapei.com.
      11) Master Builders Solutions: www.master-builders-solutions.com.
      12) Nox-Crete Inc; Duro-Nox: www.nox-crete.com.
      13) SINAK Corporation: www.sinak.com.
      14) SpecChem, LLC; Cure Hard: www.specchemllc.com.
      15) SpecChem, LLC; SpecHard: www.specchemllc.com.
      16) W. R. Meadows, Inc; Med-Cure: www.wrmeadows.com.
      17) W. R. Meadows, Inc; Liqui-Hard: www.wrmeadows.com.
      18) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
4. Composition: Collodial silica.
   a. Products:
      1) Solomon Colors; Lythic Densifier: www.solomoncolors.com.
      2) Solomon Colors; Lythic Densifier XL: www.solomoncolors.com.
      3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Hybrid silicate.
   a. Products:
      1) Ameripolish, Inc; 3D HS Hybrid Silicate Densifier: www.ameripolish.com.
      2) Nox-Crete Inc; Duro-Nox HSC: www.nox-crete.com.
      3) Nox-Crete Inc; Duro-Nox HS: www.nox-crete.com.
      4) Hi-Tech Systems; ConDense HS: www.hitechpolyurea.com.
      5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Composition: Lithium polysilicate, pre catalyzed.

a. Products:
1) SINAK Corporation: www.sinak.com.
2) Mapei Corporation; Mapecrete Hard LI: www.mapei.com.
3) Substitutions: Reference 01 60 00 - Product Requirements fo additional Content.

B. Dry Shake Hardener: Premixed dry powder for spreading on and working into concrete surface prior to set.
1. Color(s): As selected by Architect from Manufacturer's full range of options.
2. Color(s): As delineated within Drawings, Contract Documents
3. Composition: No metallic aggregate.
a. Products:
1) Dayton Superior Corporation: www.daytonsuperior.com.
2) Euclid Chemical Company; SURFLEX: www.euclidchemical.com.
3) Euclid Chemical Company; SURFLEX TR: www.euclidchemical.com.
4) Kaufman Products Inc; Tycron: www.kaufmanproducts.com.
5) L.M. Scofield Company; Emerchrome SC Color Hardener: www.scofield.com.
6) L.M. Scofield Company; LITHOCHROME Color Hardener: www.scofield.com.
7) Master Builders Solutions: www.master-builders-solutions.com.
8) Substitutions: Reference Sectio 01 60 00 - Product Requirements for additional Content.
4. Composition: Non oxidizing metallic aggregate.
a. Products:
1) Dayton Superior Corporation: www.daytonsuperior.com.
2) Euclid Chemical Company; DIAMOND PLATE: www.euclidchemical.com.
3) Kaufman Products Inc; Tycron Met NR: www.kaufmanproducts.com.
4) Master Builders Solutions: www.master-builders-solutions.com.
5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Metallic, aluminum oxide (emery) aggregate.
a. Products:
1) Dayton Superior Corporation: www.daytonsuperior.com.
2) Kaufman Products Inc; Tycron EM: www.kaufmanproducts.com.
3) L&M Construction Chemicals, Inc; EMERYPLATE FF: www.lmcc.com.
4) Master Builders Solutions: www.master-builders-solutions.com.
5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Composition: Metallic, iron aggregate.
a. Products:
1) BRICKFORM; BRICKFORM Color Hardener: www.brickform.com.
2) Dayton Superior Corporation: www.daytonsuperior.com.
3) Euclid Chemical Company; EUCO-PLATE HD: www.euclidchemical.com.
4) Kaufman Products Inc; Tycron Met: www.kaufmanproducts.com.
5) Kaufman Products Inc; Tycron Met 200: www.kaufmanproducts.com.
6) Master Builders Solutions: www.master-builders-solutions.com
7) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 COATINGS

A. Concrete Floor Topping with Aggregate: Pre mixed blend of Portland cement, hardeners and emery/corundum.
1. Products:
a. Dayton Superior Corporation www.daytonsuperior.com.
b. Euclid Chemical Company; SURFLEX E: www.euclidchemical.com.

c. Euclid Chemical Company; EUCOFLOOR E: www.euclidchemical.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Concrete Stain or Dye: Translucent, penetrating compound for interior or exterior use; must be finished with a topical sealer.
1. Number of Coats: Minimum (4) Four.
2. VOC: 100 g/L or less.
3. Application:
a. Primary Color: Spray applied.
b. Secondary Color: Spray applied.
4. Composition: Water based, nonreactive.
a. Products:
1) Ameripolish, Inc; Surelock Concrete Dye: www.ameripolish.com.
2) BRICKFORM; BRICKFORM ARTesian Stain: www.brickform.com.
3) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
4) Euclid Chemical Company; STONE ESSENCE: www.euclidchemical.com.
5) Green Umbrella Architectural Concrete Systems; NanoDye: www.greenumbrellasystems.com.
6) PROSOCO, Inc; GemTone Stain: www.prosoco.com.
7) SureCrete Design Products: www.surecretedesign.com.
8) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Sovent based, nonreactive.
a. Products:
1) Ameripolish, Inc; Surelock Concrete Dye: www.ameripolish.com.
2) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
3) Rust-Oleum Corporation; Seal-Krete High Performance Color-Shell: www.rustoleum.com.
4) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Composition: Acid based, chemically reactive.
a. Products:
1) BRICKFORM; BRICKFORM Blush Tone Acid Stain: www.brickform.com.
2) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
3) Euclid Chemical Company; STAIN-CRETE: www.euclidchemical.com.
4) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
7. Composition: Non-volatile acid-based, chemically reactive.
a. Products:
1) BRICKFORM; BRICKFORM E-Stain: www.brickform.com.
2) L.M. Scofield Company; LITHOCHROME Chemstain Classic Concrete Stain: www.scofield.com.
3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
8. Composition: Polymer based, chemically reactive.
a. Products:
1) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. High Gloss Clear Coating: Transparent, nonyellowing, acrylic polymer based coating.
1. Composition: Solvent based.
2. Products:
a. Clemons Concrete Coatings: www.clemonsconcretecoatings.
b. Concrete Sealers USA: www.concretesealersusa.com.

c. Dayton Superior Corporation: www.daytonsuperior.com.
d. Hi-Tech Systems; ConSeal HG: www.hitechpolyurea.com.
e. Kaufman Products Inc; Krystal ReFresh: www.kaufmanproducts.com.
f. Kaufman Products Inc; Krystal ReFresh OTC: www.kaufmanproducts.com.
g. Nox-Crete Inc; Stifel Series Water Repellents: www.nox-crete.com.
h. PROSOCO, Inc; LSGuard: www.prosoco.com.
i. SpecChem, LLC; Aqua Shine: www.specchemllc.com.
j. W. R. Meadows, Inc; Deck-O-Grip W/B (slip resistant): www.wrmeadows.com.
k. W. R. Meadows, Inc; Decra-Seal W/B: www.wrmeadows.com.
l. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

3. Composition: Water based.
   a. Nonvolatile Content: 15 percent, minimum, when measured by volume.
   b. Products:
      1) BRICKFORM; BRICKFORM Gem-Seal 100 VOC: www.brickform.com.
      2) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
      3) Concrete Sealers USA: www.concretesealersusa.com.
      4) Dayton Superior Corporation: www.daytonsuperior.com.
      5) Euclid Chemical Company: ULTRAGUARD: www.euclidchemical.com.
      6) Kaufman Products Inc; Krystal ReFresh: www.kaufmanproducts.com.
      7) Kaufman Products Inc; Krystal ReFresh OTC: www.kaufmanproducts.com.
      8) LATICRETE L&M; www.lmcc.com.
      9) PROSOCO, Inc; LSGuard: www.prosoco.com/consolideck.com.
      10) SpecChem, LLC; Crystal Shine: www.specchemllc.com.
      11) SpecChem, LLC; Deco Shine: www.specchemllc.com.
      12) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Low Gloss Clear Coating: Transparent, nonyellowing, acrylic polymer based coating.
   1. Composition: Solvent-based.
   2. Products:
      a. Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   3. Composition: Water based.
      a. Nonvolatile Content: 20 percent, minimum, when measured by volume.
      b. Products:
         1) Concrete Sealers USA; TS202: www.concretesealersusa.com.
         2) Concrete Sealers USA; TS210: www.concretesealersusa.com.
         3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Color Coating: Pigmented coating recommended by Manufacturer for finishing concrete floors and slabs.
   1. Gloss: As selected by Architect from Manufacuturer's full range of options.
   2. Color(s): As selected by Architect from Manufacturer's full range of options.
   3. Type: Polyaspartic; two component, fast curing.
      a. Products:
         1) ARDEX Engineered Cements: www.ardexamericas.com.
         2) HP Spartacote, Inc: www.hpspartacote.com.
         3) Master Builders Solutions; www.master-builders-solutions.com.
         4) Quantum Chemical, a division of Quantum Technical Services, Ltd; PRECIDIUM LS1150D RFS: www.quantumchemical.com.
         5) Sika Corporation; Sikafloor 510N LPL: www.sikausa.com.

6) Substitutions: Reference Section 01 60 00 - Product Requirements for additioal Content.

4. Type: High solids acrylic; one component; fast curing.
   a. Products:
      1) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
      2) Dayton Superior Corporation: www.daytonsuperior.com.
      3) Euclid Chemical Company; CONCRETE STAIN SEALER: www.euclidchemical.com.
      4) SpecChem, LLC; Surface Shine Gray: www.specchemllc.com.
5. Type: High solids epoxy; two component.
   a. Products:
      1) Allied Construction Technologies, Inc www.actechperforms.com.
      2) ARDEX Engineered Cements:www.ardexamericas.com.
      3) Euclid Chemical Company; DURALTEX: www.euclidchemical.com.
      4) Kaufman Products Inc; SurePoxy Protective Coating WD: www.kaufmanproducts.com.
      5) Kaufman Products Inc; K PRO CRS: www.kaufmanproducts.com.
      6) Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
      7) SureCrete Design Products: www.surecretedesign.com.
      8) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Type: High solids aliphatic polyurethane; one or two comonent.
   a. Products:
      1) ARDEX Engineered Cements: www.ardexamericas.com.
      2) Dayton Superior Corporation: www.daytonsuperior.com.
      3) Euclid Chemical Company; EUCOTHANE: www.euclidchemical.com.
      4) Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
      5) Nox-Crete Inc; Acryl-Pen: www.nox-crete.com.
      6) SureCrete Design Product: www.surecretedesign.com.
      7) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
7. Type: Solvent based penetrating silane; two component.
   a. Products:
      1) Dayton Superior Corporation: www.daytonsuperior.com.
      2) Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
      3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Clear Coating: Clear coatin, as recommended by Manufacturer for finishing of concrete floors and slabs, this particular Project.
   1. Gloss: As selected by Architect from Manufacturer's full range of options.
   2. Color(s): As selected by Architect from Manufacturer's full range of options.
   3. Type: High solids epoxy; two component.
      a. Products:
         1) SureCrete Design Products: www.surecretedesign.com.
         2) Substitutions: Reference Section 01 60 00 - Product Requirements fo additional Content.
   4. Type: High solids polyurethane; two component.
      a. Products:
         1) SureCrete Design Products: www.surecretedesign.com.
         2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   5. Type: Membrane forming, lithium water based, clear liquid coating for application to newly placed concrete.

a. Products:
1) Adhesives Technology Corporation; CONVERGENT Pentra-Finish (HG): www.atcepoxy.com.
2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Clear, Penetrating, Moisture Vapor Resistant Coating: Vapor resistant and pH reducing coating recommended by Manufacturer for new and existing concrete floors and slabs.
1. Type: High solids epoxy; two component.
2. Products:
a. LATICRETE International, Inc; Vapor Ban E: www.laticrete.com.
b. Rust-Oleum Corporation; TVB 100% Solids Topside Vapor Barrier: www.rustoleum.com.
c. Rust-Oleum Corporation; TVB Water Based Topside Vapor Barrier: www.rustoleum.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements fo additional Content.

H. Penetrating Sealer: Transparent, nonyellowing, water- or solvent-based coating.
1. Composition: Siloxane.
a. Products:
1) Concrete Sealers USA: www.concretesealersusa.com.
2) SureCrete Design Products: www.surecretedesign.com.
3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
2. Composition: Silane.
a. Products:
1) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
2) Concrete Sealers USA: www.concretesealersusa.com.
3. Composition: Silane siloxane mixture.
a. Products:
1) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
2) Concrete Sealers USA; www.concretesealersusa.com.
3) Hi-Tech Systems; ConSeal PS: www.hitechpolyurea.com.
4) TK Products Construction Coatings:: www.surecretedesign.com.
5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content
4. Composition: Siliconate.
a. Products:
1) Concrete Sealers USA: www.concretesealersusa.com.
2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Fluorinated.
a. Products:
1) Concrete Sealers USA: www.concretesealersusa.com.
2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Composition: Silane acrylic mixture.
7. Products:
a. Nox-Crete Inc; Tri-Shield: www.nox-crete.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
8. Composition: Nonresinous, hybrid colloidal polymer.
a. Products:

1) Green Umbrella Architectural Concrete Systems; Interior Microfilm: www.greenumbrellasystems.com.
2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

9. Composition: Lithium silicate.
   a. Products:
      1) Adhesives Technology Corporation; CONVERGENT Pentra-Guard (EXT): www.atcepoxy.com.
      2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
10. Composition:
    a. Products:
       1) Ameripolish, Inc; 3D SP Concrete Sealer: www.ameripolish.com.
       2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Plastic Aggregate: Finely ground polymer for addition to coatings for slip resistance.
   1. Products:
      a. Dayton Superior Corporation www.daytonsuperior.com.
      b. Euclid Chemical Company; EUCO GRIP: www.euclidchemical.com.
      c. SpecChem, LLC; Surface Grip: www.specchemllc.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

J. Natural Aggregate: Finely ground stone for addition to coatings for slip resistance.
   1. Products:
      a. Dayton Superior Corporation: www.daytonsuperior.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** existing floor surfaces are acceptable to receive Scope of Work, this Section.

B. **Confirm all** flaws within concrete surfaces were previously patched and all joints filled with only those methods, materials suitable for further, additional finishes.

3.02 GENERAL

A. **Apply all** Work, this Section, in full accordance with Manufacturer's instructions.

3.03 COATING, APPLICATION

A. **Verify all** surfaces are free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts or residues from cleaning agents, and other impediments to adhesion.

B. **Confirm all** water vapor emissions from concrete and relative humidity within same, are within those limits previously established by Contract Documents.

C. **Protect all** adjacent non coated areas from any drips, overflow or overspray. Immediately remove any excess material.

D. **Apply all** coatings in full accordance with Mafacturer's instructions, while matching previously approved mock ups for construction, color, special effects, sealing, finish, texture and workmanship.

END OF SECTION

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SECTION 04 01 00
MAINTENANCE OF MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thorough cleaning of Existing Masonry surfaces.

B. Replacement of Existing Masonry units.

C. Repointing Existing Masonry mortar joints.

D. Repair of Existing damaged Masonry.

E. Surface reinforcing of bowed, cracked, and weakened Existing Masonry.

F. Retrofitting of Existing Masonry veneer construction.

1.02 RELATED REQUIREMENTS

A. Section 04 22 00 - Concrete Unit Masonry.

1.03 ABBREVIATIONS - ACRONYMS

A. CFRP: Carbon Fiber Reinforced Polymer.

1.04 DEFINITIONS

A. Carbon Fiber Reinforced Polymer: Composite material comprising a polymer matrix reinforced with carbon fiber cloth, mat, or strands.

1.05 REFERENCE STANDARDS; " USE CURRENT EDITION, ALL "...

A. ACI PRC-440.7 - Externally Bonded Fiber-Reinforced Polymer Systems Design and Construction for Strengthening Masonry Structures - Guide; 2022.

B. ACI SPEC-440.8 - Specification for Carbon and Glass Fiber-Reinforced Polymer (FRP) Materials Made by Wet Layup for External Strengthening of Concrete and Masonry Structures; 2013 (Reapproved 2023).

C. ACI SPEC-548.14 - Repairing Concrete with Epoxy Mortar—Specification; 2025.

D. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.

E. ASTM D3039/D3039M - Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials; 2017.

F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

G. ICC-ES AC125 - Acceptance Criteria for Concrete and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber-Reinforced Polymer (FRP) Composite Systems; 2021, with Editorial Revision (2022).

H. ICC-ES AC178 - Acceptance Criteria for Inspection and Verification of Concrete and Reinforced and Unreinforced Masonry Strengthening Using Fiber-Reinforced Polymer (FRP) or Steel-Reinforced Polymer (SRP) Composite Systems; 2017, with Editorial Revision (2020).

I. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.06 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene (21) Twenty One calender days prior to beginning any Work, this Section.
   1. Require attendance of parties directly affecting work of this section.
   2. Review conditions of installation, installation procedures, and coordination with related work.

B. Scheduling:

1. Perform cleaning and washing of masonry **between hours of 8:00 a.m. to 4:00 p.m. only.**

1.07 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Provide detailed data for all cleaning Products.

C. Product Data: Provide manufacturer's product data and MSDS sheets on CFRP systems, including physical and chemical characteristics, material specifications for each component, limitations on use of system, construction or application instructions, maintenance instructions, and general manufacturer's recommendations regarding each system.

D. Shop Drawings: Indicate setting details of stone. Detail shoring.

E. Shop Drawings: For CFRP, indicate details of fiber architecture, fiber type, dimensions, number and thickness of layers, direction of fiber layers, sequence of layer applications, lap splices, joint and end details, anchorage of CFRP composite system, proposed connections to diaphragms and adjacent walls, and locations of CFRP. Provide shop drawings signed and sealed by Professional Engineer.

F. Samples: Submit four samples of decorative block, face brick, and stone units to illustrate matching color, texture and extremes of color range.

G. Samples: Submit (2) Two Product Samples, Manufacturer's standard sized, as required to accurately illustrate construction, color and finish.

H. Evaluation Service Reports: Show compliance of CFRP system with specified requirements of ICC-ES AC125 and ICC-ES AC178.

I. Manufacturer's Instructions: For cleaning materials, indicate special procedures, conditions requiring any special attention, this particular Project

J. CFRP Manufacturer's Instructions:
   1. Mixing instructions.
   2. Curing times between coats or layers.
   3. Application procedures for surface coatings.
   4. Application procedures of top coating material.

K. CFRP Field Quality Control Submittals.

L. CFRP designer's qualification statement.

M. CFRP manufacturer's qualification statement.

N. CFRP installer's qualification statement.

O. CFRP testing agency's qualification statement.

P. Executed CFRP Warranty.

1.08 QUALITY ASSURANCE MASONRY WORK

A. Comply with all provisions of TMS 402/602, except where exceeded by those requirements of Contract Documents or Local Authorities having Jurisdiction.
   1. Maintain minimum (1) One Copy, each Document within Existing Project Site.

B. Restorer: Company specializing in Masonry restoration with minimum (10) Ten Years documented experience.

1.09 QUALITY ASSURANCE CFRP WORK

A. Quality Control Plan: For installation and curing of CFRP materials, including personnel safety, installer certification, application and inspection of CFRP system, location and placement of splices, curing provisions, means to assure dry surfaces, quality assurance samples, and cleanup.

B. Designer Qualifications: Perform design under direct supervision of Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.

D. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

E. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections in full accordance with ICC-ES AC125 and ICC-ES AC178.

F. Documents at Project Site: Maintain at project site one copy of manufacturer's instructions and shop drawings.

1.10 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Restore and repoint an existing masonry wall area sized, (12) Twelve Feet Square, while including within mock up, instances of mortar, accessories and wall openings.

C. Thoroughly clean a (12) Twelve Foot Square area of existing masonry wall, as required to accurately determine extent of entire cleanng necessary for this particular Project.
   1. Repeat process, using different cleaning methods, Products, for maximum (3) Three existing masonry mock up areas

D. Locate as directed by Architect.

E. Acceptable panel, Products and procedures employed, will represent standard for Scope of Work, entire Project

F. **Mock up panels may not remain as portion of permanent Work, this particular Project.**

1.11 DELIVERY, STORAGE, HANDLING

A. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

B. Store blast medium materials in manufacturer's packaging.

C. Deliver polymer resin materials in original factory sealed containers with Manufacturer's labels intact and legible with verification of product nomenclature, manufacturer's name, product identification and batch number, date of manufacture, and shelf life or expiration date. Do not use polymer resin materials that have exceeded shelf life.

D. Store all materials within covered, well ventilated areas protected from exposure to detrimental conditions, including airborne contaminants, dirt, dust, sunlight, temperatures lower than (50) Fifty degrees Fahrenheit, or greater than (90) Ninety degrees Fahrenheit, rainnfall, sparks, or flame, and in full accordance with the Manufacturer's requirements. Store all polymer resins and hardeners in separate area from construction materials that may absorb odors.

1.12 FIELD CONDITIONS, MASONRY WORK

A. Cold and Hot Weather Requirements: Fully comply with all requirements of TMS 402/602 or applicable building codes, whichever is more stringent.

B. Maintain all materials, surrounding air temperature to minimum (50) Fifty degrees Fahrenheit, prior to, during and immediately following completion of Work, this Section.

C. **Do not** blast clean, use any process creating dust, dirt or construction debris.

1.13 FIELD CONDITIONS, CFRP WORK

A. **Do not** apply primers, saturating resins or adhesives to cold, frozen surfaces.

B. **Do not** use supplemental sources of heat to raise air or masonry surface temperature, unless previously approved by CFRP system's Manufacturer.

C. **Do not** apply resins, adhesives to damp towet surfaces.

D. Provide temporary protection from direct contact by rain, dust, dirt, excessive sunlight and high humidity during installation and until all resins have cured.

1.14 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Warranty: Provide (10) Ten Year Warranty for CFRP system design, installation, bond to the substrate, and interlaminar bond, as well as mechanical property retention and fabric resin compatibility, commencing upon previously established Project Substantial Completion Date. Complete all forms in Owner's name and register samewith Warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Restoration and Cleaning Chemicals:
   1. Diedrich Technologies, Inc: www.diedrichtechnologies.com.
   2. HMK Stone Care System: www.hmkstonecare.com.
   3. PROSOC: www.prosoco.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 CLEANING MATERIALS

A. Cleaning Agent: Detergent type.

B. Cleaning Agent: 0.5 lb of sodium hydrosulfite mixture to (1) One Gallon of water.

C. Acid Solution: Clean, stain free, commercial hydrochloric (muriatic) acid, mixed one part to 10 parts of potable water.

2.03 CFRP SYSTEMS

A. Manufacturers:
   1. Fortress Stabilization Systems: www.fortressstabilization.com.
   2. Master Builders Solution: www.master-builders-solutions.com.
   3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. CFRP Systems:
   1. Wet Layup CFRP System: Dry unidirectional or multidirectional carbon fiber sheets or fabrics are impregnated on-site with saturating epoxy resin to bond sheets to masonry surfaces. Wet layup systems are saturated with resin prior to placement on masonry surfaces and cured in place.
   2. Dry Layup CFRP System: Dry unidirectional or multidirectional carbon fiber sheets or fabrics are impregnated on-site with saturating epoxy resin to bond sheets to masonry surfaces. In dry layup systems, fabric is placed on masonry surfaces, saturated in place with resin, and cured in place.
   3. Prepreg CFRP System: Unidirectional or multidirectional carbon fiber sheets or fabrics are preimpregnated with saturating uncured polymer resin in supplier's facility. Prepreg systems are bonded to masonry surfaces with or without additional resin application, depending upon specific system requirements and cured in place. Prepreg systems usually require heat for cure.
   4. Precured CFRP System: Carbon fiber fabricated as strips, plates, ribbons, and bars in an open mesh grid configuration with a resin matrix of vinyl ester manufactured in system supplier's facility and shipped to job site. Polyurethane structural adhesive typically bonds precured shapes to masonry surfaces.

C. Design Criteria:
   1. Design the CFRP system in conformance with ACI PRC-440.7 to provide seismic, wind, and blast strengthening for clay and concrete masonry walls.
   2. Wet Layup CFRP System: Comply with ACI SPEC-440.8.
   3. Fully comply with ICC-ES AC125 Acceptance Criteria.
   4. Fully omply with ICC-ES AC178 Acceptance Criteria.

5. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less (Class A), when tested in full accordance with ASTM E84.

2.04 CFRP MATERIALS

A. Liquid Epoxy Adhesive: Two component, 100 percent solids, moisture tolerant, low to medium viscosity, high strength, low modulus, multipurpose; comply with ACI SPEC-440.8; fully comply with ASTM C881/C881M. Uses shall include:
   1. Wet or dry layup of unidirectional or bidirectional carbon fiber to create CFRP system in masonry construction.
   2. Fill voids and cracks in masonry construction.

B. Unidirectional Carbon Fiber: Comply with ACI SPEC-440.8. For application to masonry construction with liquid epoxy adhesive for crack repair and reinforcement.

C. Bidirectional Carbon Fiber: For application to masonry construction with liquid epoxy adhesive for crack repair and reinforcement.

D. Carbon Fiber Stitch: Comply with ACI SPEC-440.8. Fabricated unidirectional carbon fiber reinforcements with flared ends that are recessed into masonry material with epoxy paste to span and reinforce masonry cracks.

2.05 CFRP ACCESSORIES

A. Polyurethane Foam: Two component, low viscosity, self expanding; used for filling cracks and voids in masonry construction.

B. Epoxy Injection Adhesive: For bonding cracked surfaces together in masonry construction.

C. Epoxy Paste: Two-component, 100 percent solids, moisture-insensitive, high strength, high modulus, multipurpose liquid epoxy gel adhesive; comply with ASTM C881/C881M for Types I, II, IV, and V, Grade 3, Classes B and C. Uses include:
   1. Sealing holes, pits, and cracks in masonry construction.
   2. Bonding carbon fiber stitches to masonry construction.

D. Primer: To saturate and penetrate masonry surface and enhance bond strength of CFRP system. Wet layup systems typically require primers.

E. Anchors: As required by CFRP system Manufacturer and indicated within Contract Documents.

2.06 RETROFIT ACCESSORIES

A. Manufacturers:
   1. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Description:
   1. Retrofit Wall Ties: Type 304 stainless steel, 3/8 inch by (7) Seven inches, designed for retrofit installation in rainscreen applications, anchored to stud framing with fasteners and in mortar joint with anchoring epoxy from interior.
   2. Retrofit Weeps: Polyethylene, 3/8 inch diameter by depth of brick, anchored in drilled hole in mortar joint with two part epoxy bonding agent.

2.07 MASONRY MATERIALS

A. Reference Section 04 22 00 - Concrete Unit Masonry for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** surfaces were previously, thoroughly clean and are ready for Work, this Section, prior to commencing any Work, this Section.

B. **Confirm all** masonry surfaces scheduled to receive CFRP, are dry, as required by CFRP system's Manufacturer. Evaluate moisture content in full accordance with ACI SPEC-548.14.

3.02 PREPARATION

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

B. Carefully remove and temporarily store all removable items, a directed by Architect and reinstall same, immediately upon completion of Work, this Section.

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

D. Fully cover, protect all existing landscaping.

E. Mask all adjacent surfaces with material that will withstand cleaning and restoration procedures.

F. Close off all adjacent areas with dust, weather proof temporary partitions.

G. Protect all roof membrane and flashings from damage with plywood laid on roof surface over full extent of Work area, traffic routes.

H. When using cleaning methods that involve water or other liquids, install drainage devices, as required to prevent any runoff over adjacent surfaces.

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

3.03 CLEANING NEW MASONRY

A. Verify all mortar is fully set, cured, prior to commencing any Work, this Section

B. Thoroughly clean all surfaces, remove all particles with wood scrapers, brass or nylon wire brushes.

C. Scrub walls cleaning agent solution using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar using clean, pressurized water.

D. Use acid solution mixed with water in accordance with Manufacturer's instructions. Apply acid solution and scrub masonry with stiff fiber brushes. **Do not** scrub mortar joints.

E. Protect all areas below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar, continuously for duration of cleaning process.

F. Before solution dries, thoroughly rinse, entirely remove acid solution using only clean, pressurized water.

3.04 RESTORATION CLEANING

A. Thoroughly clean all surfaces, remove all particles with wood scrapers or non ferrous wire brushes

B. Spray coat masonry with restoration type cleaner, mixed into solution in full accordance with Manufacturer's written instructions.

C. Provide second application, as required to match previously approved mock up.

D. Allow sufficient time for solution to remain upon masonry and agitate with soft fiber brush or sponge.

E. Thorougly rinse from bottom up with potable water applied at 400 psi and at a rate of 4 gal/min.

3.05 AGING

A. Rub all new masonry Work, as required to match all original Work.

B. After each application, remove surplus, wash down with low pressure hose. Allow surface to fully dry before proceeding with any succeeding applications.

C. Continue process until accepted by both Owner and Architect.

3.06 CLEANING, PROTECTION

A. Immediately, thoroughly clean, remove all stains, efflorescence, all Work, this Section.

B. Thoroughly clean, remove all excess mortar, smears, droppings, immediately, as Work proceeds, all Work, this Section.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 042200

CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry-joint reinforcement.
5. Miscellaneous masonry accessories.

1.02 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Material Certificates: For each type and size of the following:

1. Masonry units.
    a. Include data on material properties and material test reports substantiating compliance with requirements.
    b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
2. Cementitious materials. Include name of manufacturer, brand name, and type.
3. Mortar admixtures.
4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
5. Grout mixes. Include description of type and proportions of ingredients.
6. Reinforcing bars.
7. Joint reinforcement.
8. Anchors, ties, and metal accessories.

C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.

D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined in accordance with TMS 602/ACI 530.1/ASCE 6.

E. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified in accordance with ASTM C1093 for testing indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.07 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.02 PERFORMANCE REQUIREMENTS

A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) in accordance with TMS 602/ACI 530.1/ASCE 6.

2.03 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.04 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

2. Provide bullnose units for outside corners unless otherwise indicated.

B. CMUs: ASTM C90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi.

2. Density Classification: Normal weight (135 PCF).

3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.

2.05 MASONRY LINTELS

A. General: Provide one of the following:

B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.06 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content is not more than 0.1 percent when tested in accordance with ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

D. Aggregate for Grout: ASTM C404.

E. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

F. Water: Potable.

2.07 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

C. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A951/A951M.

1. Interior Walls: Hot-dip galvanized carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: 0.187-inch diameter.
4. Wire Size for Cross Rods: 0.187-inch diameter.
5. Spacing of Cross Rods: Not more than 16 inches o.c.
6. Provide in lengths of not less than 10 feet , with prefabricated corner and tee units.

2.08 TIES AND ANCHORS

A. General: Ties and anchors extend at least 1-1/2 inches into masonry but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Mill-Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A641/A641M, Class 1 coating.
2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.

C. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, hot-dip galvanized steel
2. Tie Section: Triangular-shaped wire tie made from 0.25-inch diameter, hot-dip galvanized steel.

D. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.105-inch-thick steel sheet, galvanized after fabrication
    a. 0.108-inch thick, galvanized-steel sheet may be used at interior walls unless otherwise indicated.
2. Tie Section: Triangular-shaped wire tie made from 0.25-inch diameter, hot-dip galvanized steel wire.

E. Partition Top Anchors: 0.105-inch-thick metal plate with a 3/8-inch-diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

2.09 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.

2.10 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
1. For masonry below grade or in contact with earth, use Type M.
2. For reinforced masonry, use Type M.
3. For interior nonload-bearing partitions, Type O.

D. Grout for Unit Masonry: Comply with ASTM C476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
3. Provide grout with a slump of 8 to 11 inches as measured in accordance with ASTM C143/C143M.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that would impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Build chases and recesses to accommodate items specified in this and other Sections.

B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.03 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.04 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets.

Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

I. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.

1. Install compressible filler in joint between top of partition and underside of structure above.
2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

3.05 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. Bed face shells in mortar and make head joints of depth equal to bed joints.
2. Bed webs in mortar in all courses of piers, columns, and pilasters.
3. Bed webs in mortar in grouted masonry, including starting course on footings.
4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.

B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

E. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.06 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.

2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.

3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.07 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:

1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.

2. Anchor masonry with anchors embedded in masonry joints and attached to structure.

3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.08 CONTROL AND EXPANSION JOINTS

A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry as follows:

1. Install preformed control-joint gaskets designed to fit standard sash block.

3.09 LINTELS

A. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.10 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

2. Limit height of vertical grout pours to not more than 60 inches.

3.11 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements is done at Contractor's expense.

B. Inspections: Special inspections in accordance with Level B in TMS 402/ACI 530/ASCE 5.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

D. Concrete Masonry Unit Test: For each type of unit provided, in accordance with ASTM C140 for compressive strength.

E. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.

F. Grout Test (Compressive Strength): For each mix provided, in accordance with ASTM C1019.

3.12 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.13 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 042200

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SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Structural steel.
2. Shear stud connectors.
3. Shrinkage-resistant grout.

B. Related Requirements:

1. Section 053100 "Steel Decking" for field installation of shear stud connectors through deck.
2. Section 099123 "Interior Painting" for painting requirements.

1.03 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

1.04 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.05 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.
4. Anchor rods.
5. Threaded rods.
6. Shop primer.
7. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.

4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1/D1.1M for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).

2. Electrode manufacturer and trade name, for demand-critical welds.

D. Delegated-Design Submittal: For structural-steel connections indicated on Drawings to comply with design loads, include analysis data.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, fabricator and testing agency.

B. Welding certificates.

C. Mill test reports for structural-steel materials, including chemical and physical properties.

D. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.

2. Direct-tension indicators.

3. Tension-control, high-strength, bolt-nut-washer assemblies.

4. Shear stud connectors.

E. Source quality-control reports.

F. Field quality-control reports.

1.07 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).

B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.

2. Clean and relubricate bolts and nuts that become dry or rusty before use.

3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions of the following specifications and documents:

1. ANSI/AISC 303.
2. ANSI/AISC 360.
3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:

1. Option 2: Fabricator's experienced steel detailer shall select or complete connections in accordance with ANSI/AISC 303.
   a. Select and complete connections using ANSI/AISC 360.
   b. Use Load and Resistance Factor Design; data are given at factored-load level.

C. Construction: Shear wall system.

2.02 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992/A992M.

B. Channels, Angles: ASTM A572/A572M.

C. Plate and Bar: ASTM A572//A572M.

D. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade C.

E. Steel Pipe: ASTM A53/A53M, Grade B.

1. Weight Class: Standard.
2. Finish: Black except where indicated to be galvanized.

F. Welding Electrodes: Comply with AWS requirements.

2.03 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1, compressible-washer type with plain finish.

B. High-Strength A490 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490, Type 1, heavy-hex steel structural bolts or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 490-1, compressible-washer type with plain finish.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

1. Finish: Plain.

D. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

2.04 RODS

A. Unheaded Anchor Rods: ASTM F1554, Grade 36.

1. Configuration: Straight.
2. Nuts: ASTM A563 heavy-hex carbon steel.
3. Plate Washers: ASTM A36/A36M carbon steel.
4. Washers: ASTM F436, Type 1, hardened carbon steel.
5. Finish: Plain.

B. Threaded Rods: ASTM A36/A36M.

1. Nuts: ASTM A63 heavy-hex carbon steel.
2. Washers: ASTM A36/A36M carbon steel.
3. Finish: Plain.

2.05 PRIMER

A. Steel Primer:

1. Comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

2.06 SHRINKAGE-RESISTANT GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.07 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill,or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 3.

F. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using automatic end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.08 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.09 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.
   1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
   2. Galvanize lintels and shelf angles attached to structural-steel frame and located in exterior walls.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
   1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
   2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
   3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
      a. Liquid Penetrant Inspection: ASTM E165/E165M.
      b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
      c. Ultrasonic Inspection: ASTM E164.
      d. Radiographic Inspection: ASTM E94/E94M.
   4. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1/D1.1M for stud welding and as follows:
      a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear stud connector.
      b. Conduct tests in accordance with requirements in AWS D1.1/D1.1M on additional shear stud connectors if weld fracture occurs on shear stud connectors already tested.

5. Prepare test and inspection reports.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

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

3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.03 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Baseplates, Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.04 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.05 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.

B. Touchup Painting:

1. Cleaning and touchup painting are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.06 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.
    a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
        1) Liquid Penetrant Inspection: ASTM E165/E165M.
        2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
        3) Ultrasonic Inspection: ASTM E164.
        4) Radiographic Inspection: ASTM E94/E94M.

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SECTION 05 31 00

STEEL DECKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Composite floor deck.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.
3. Section 099123 "Interior Painting" for repair painting of primed deck and finish painting of deck.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Composite floor deck.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.04 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.
2. Acoustical roof deck.

D. Research Reports: For steel deck, from ICC-ES.

E. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.02 COMPOSITE FLOOR DECK

A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Profile Depth: As indicated.
3. Design Uncoated-Steel Thickness: As indicated.
4. Span Condition: Triple span or more.

2.03 ACCESSORIES

A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

I. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

J. Galvanizing Repair Paint: ASTM A780/A780M.

K. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.02 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.03 INSTALLATION OF FLOOR DECK

A. Fasten floor-deck panels to steel supporting members as indicated.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped or butted at Contractor's option.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.04 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

B. Repair Painting:

1. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

2. Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.05 FIELD QUALITY CONTROL

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

B. Field welds will be subject to inspection.

C. Prepare test and inspection reports.

END OF SECTION

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SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Load-bearing wall framing.
2. Exterior non-load-bearing wall framing.
3. Roof rafter framing.
4. Soffit framing.

B. Related Requirements:

1. Section 092116.23 "Gypsum Board Shaft Wall Assemblies" for interior non-load-bearing, metal-stud-framed, shaft-wall assemblies, with height limitations.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Cold-formed steel framing materials.
2. Load-bearing wall framing.
3. Exterior non-load-bearing wall framing.
4. Vertical deflection clips.
5. Single deflection track.
6. Roof-rafter framing.
7. Soffit framing.
8. Post-installed anchors.
9. Power-actuated anchors.
10. Sill sealer gasket.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

C. Delegated-Design Submittal: For non-load bearing and soffit cold-formed steel framing.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product Certificates: For each type of code-compliance certification for studs and tracks.

D. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.

4. Mechanical fasteners.
5. Vertical deflection clips.
6. Miscellaneous structural clips and accessories.

E. Research Reports:
1. For nonstandard cold-formed steel framing, post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Product Tests: Mill certificates or data from a qualified independent testing agency, or in-house testing with calibrated test equipment, indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

C. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Stud Manufacturers Association.

D. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel framing.

B. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.
1. Design Loads: As indicated on Drawings.
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
a. Exterior Non-Load-Bearing Framing: Horizontal deflection of 1/600 of the wall height when backing up brick veneer. 1/240 otherwise.
b. Soffit Framing: Vertical deflection of 1/360 of the span for live loads and 1/240 for total loads of the span.
3. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
a. Upward and downward movement of 1-1/2 inches.
5. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

C. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100, AISI S200, and the following:
1. Floor and Roof Systems: AISI S210.
2. Wall Studs: AISI S211.

3. Headers: AISI S212.
4. Lateral Design: AISI S213.

2.02 COLD-FORMED STEEL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:
   1. Grade: As required indicated.
   2. Coating: G60 or equivalent.

B. Steel Sheet for Vertical Deflection Clips: ASTM A653/A653M, structural steel, zinc coated, of grade and coating as follows:
   1. Grade: 50, Class 1.
   2. Coating: G60.

2.03 LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: As indicated.
   2. Flange Width: As indicated.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
   1. Minimum Base-Metal Thickness: As indicated.
   2. Flange Width: As indicated.

C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: As indicated.
   2. Flange Width: As indicated.

2.04 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
   1. Supplementary framing.
   2. Bracing, bridging, and solid blocking.
   3. Web stiffeners.
   4. Anchor clips.
   5. End clips.
   6. Foundation clips.
   7. Gusset plates.
   8. Stud kickers and knee braces.
   9. Joist hangers and end closures.
   10. Hole-reinforcing plates.
   11. Backer plates.

2.05 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.

B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts, carbon-steel nuts, and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.

C. Post-Installed Anchors: Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC193, ICC-ES AC58 or ICC-ES AC308 as appropriate for the substrate.

1. Uses: Securing cold-formed steel framing to structure.
2. Type: Torque-controlled expansion anchor or adhesive anchor.
3. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

D. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.

1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.06 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780/A780M.

B. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107/C1107M, and with a fluid consistency and 30-minute working time.

C. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.

D. Sill Sealer Gasket: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

2.07 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners and install according to Shop Drawings, with screws penetrating joined members by no fewer than three exposed screw threads.
4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies by means that prevent damage or permanent distortion.

C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, conditions, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.02 PREPARATION

A. Install load-bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sill sealer gasket at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.03 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners, install according to Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.04 INSTALLATION OF LOAD-BEARING WALL FRAMING

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:

1. Anchor Spacing: As indicated.

B. Squarely seat studs against top and bottom tracks, with gap not exceeding 1/8 inch between the end of wall-framing member and the web of track.

1. Fasten both flanges of studs to top and bottom tracks.
2. Space studs as follows:
    a. Stud Spacing: As indicated on Drawings.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.

D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

E. Align floor and roof framing over studs according to AISI S200, Section C1. Where framing cannot be aligned, continuously reinforce track to transfer loads.

F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure.

G. Install headers over wall openings wider than stud spacing. Locate headers above openings. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

1. Frame wall openings with not less than a double stud at each jamb of frame. Fasten jamb members together to uniformly distribute loads.
2. Install tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.

1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

I. Install horizontal bridging in stud system, spaced vertically as indicated on Drawings. Fasten at each stud intersection.

1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of two screws into each flange of the clip angle for framing members up to 6 inches deep.
2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges, and secure solid blocking to stud webs or flanges.
3. Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

J. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.05 INSTALLATION TOLERANCES

A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.06 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

3.07 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.08 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

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SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated.

B. Downspout boots.

C. Cast iron tree grates.

D. Cast iron trench castings.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

B. Section 04 20 00 - Unit Masonry.

C. Section 05 12 00 - Structural Steel Framing.

D. Section 05 21 00 - Steel Joist Framing.

E. Section 05 31 00 - Steel Decking.

F. Section 09 91 13 - Exterior Painting.

G. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. AASHTO HB - Standard Specifications for Highway Bridges; 2005, with Errata.

F. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2025.

G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

H. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

I. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.

J. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

K. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

L. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2025a.

M. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2024.

N. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

O. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

P. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

Q. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing; 2021.

R. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

S. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

T. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

U. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019a.

V. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

W. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings; 2018, with Editorial Revision.

X. ASTM B85/B85M - Standard Specification for Aluminum-Alloy Die Castings; 2018, with Editorial Revision.

Y. ASTM B177/B177M - Standard Guide for Engineering Chromium Electroplating; 2011 (Reapproved 2021).

Z. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

AA. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

BB. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

CC. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

DD. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2025.

EE. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

FF. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

GG. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025.

HH. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

II. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019, with Editorial Revision (2025).

JJ. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

KK. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

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

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.
      a. Include the following, as applicable:
         1) Design criteria.
         2) Engineering analysis depicting stresses and deflections.
         3) Member sizes and gauges.
         4) Details of connections.
         5) Support reactions.
         6) Bracing requirements.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than (8) Eight months before start of scheduled welding work.

D. Designer's Qualification Statement.

E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE

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

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than (8) Eight months before start of scheduled welding work.

C. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS, STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Stainless Steel, General: ASTM A666/A666M, Type 304.

F. Stainless Steel Tubing: ASTM A554, Type 304, 16 gauge, 0.0625 inch minimum metal thickness, 1-1/2 inch diameter.

G. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.

H. Slotted Channel Fittings: ASTM A1011/A1011M.

I. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

J. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.

K. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

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

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

N. Touch Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with all VOC limitations of those Authorities having Jurisdiction.

2.02 MATERIALS, ALUMINUM

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.

C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.

D. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.

E. Aluminum-Alloy Sand Castings: ASTM B26/B26M.

F. Aluminum-Alloy Die Castings: ASTM B85/B85M.

G. Bolts, Nuts, and Washers: Stainless steel.

H. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

A. Fit and shop assemble all items within largest practical sections, as required for delivery to Existing Project Site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by intermittent welds and plastic filler.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

A. Telescopic Steel Columns: Steel pipe; prime paint finish.
   1. Diameter: As delineated within Contract Documents
   2. Height: As delineated within Contract Documents.

B. Bumper Posts and Guard Rails: As delineated within Contract Documents.

C. Bollards: Steel pipe, concrete filled as delineated within Contract Documents.

D. Joist Hangers: Strap anchors, as delineated within Contract Documents.

E. Ledge Angles, Shelf Angles, Channels, and Plates, as delineated within Contract Documents.

F. Lintels: As delneated within Contract Documents.

G. Elevator Hoistway Divider Beams: As delineated within Contract Documents.

H. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

2.05 DOWNSPOUT BOOTS

A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots and on-body cleanout and cover with neoprene gaskets.
   1. Configuration: Angular.
   2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
   3. Finish: Manufacturer's standard factory applied powder coat finish.
   4. Color: To be selected by Architect from Manufacturer's full range.
   5. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, and rubber coupling.
   6. Manufacturers:
      a. Downspoutboots.com, a division of J. R. Hoe & Sons www.downspoutboots.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.06 CAST IRON, TREE GRATES

A. Cast Iron Tree Grates:
   1. Material: Cast iron; ASTM A48/A48M.
   2. Manufacturers:
      a. Neenah Foundry, a division of Neenah Enterprises, Inc.: www.nfco.com.
      b. SiteScapes, Inc.: www.sitescapesonline.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.07 CAST IRON, TRENCH CASTINGS

A. Cast Iron Trench Castings:
   1. Material: Cast iron; ASTM A48/A48M, Class 35 B (heavy duty).
   2. Grate Type: Manufacturer's standard Type A.
   3. Manufacturers:
      a. Neenah Foundry, a division of Neenah Enterprises, Inc.: www.nfco.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.08 FINISHES, STEEL

A. Prime paint steel items.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: Two coats.

E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.09 FINISHES, ALUMINUM

A. Exterior Aluminum Surfaces: Class I color anodized.

B. Interior Aluminum Surfaces: Class I natural anodized.

C. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

D. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31 Clear anodic coating not less than 0.4 mils thick.

E. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick; light bronze.

F. Class I Color Anodized Finish: AAMA 611 AA-M12C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils thick; light bronze.

G. Class II Color Anodized Finish: AAMA 611 AA-M12C22A32 Integrally colored anodic coating not less than 0.4 mils thick; light bronze.

H. Class II Color Anodized Finish: AAMA 611 AA-M12C22A34 Electrolytically deposited colored anodic coating not less than 0.4 mils thick; light bronze.

I. Pigmented Organic Coating System: AAMA 2603 polyester or acrylic baked enamel finish; color as indicated.
   1. Manufacturers:
      a. PPG; Duracron: www.ppgmetalcoatings.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

J. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system; color as indicated.
1. Manufacturers:
a. Sherwin-Williams Company; POLANE Solar Reflective 2K Urethane Enamel: oem.sherwin-williams.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

K. High Performance Organic Coating System: Multi coat, high durable polyester system; color as indicated on drawings.
1. Systems:
a. Two coat in accordance with AAMA 2604.
b. Three coat in full accordance with AAMA 2605.
2. Manufacturers:
a. Beckers Group; Beckry Tech: www.beckers-group.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

L. Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system; color as indicated.
1. Manufacturers:
a. Beckers Group; Beckry Fluor: www.beckers-group.com.
b. PPG; Duranar: www.ppgmetalcoatings.com.
c. Sherwin-Williams Company; Fluropon: www.coil.sherwin.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

M. Fluoroethylene Vinyl Ether (FEVE) Coating: Superior performing resin based organic powder coatings system complying with AAMA 2605; single coat applications when applied to aluminum with dry film thickness (DFT) of 2 to 3 mil, 0.002 to 0.003 inch; color and gloss as scheduled.
1. Apply coating to exposed metal surfaces with proper preparation and pretreatment in accordance with resin manufacturer's instructions.
2. Products:
a. PPG; Coraflon Platinum: www.ppgindustrialcoatings.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

N. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

2.10 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch within 48 inches.

E. Maximum Deviation From Plane: 1/16 inch within 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Confirm all** Existing Project Site conditions are acceptable, ready to receive all Work of this Section, prior starting any Work, this Section.

3.02 PREPARATION

A. **Thoroughly clean and strip all** previously primed steel items, to bare metal surface, when welding, painting upon Existing Project Site is indicated within Contract Documents.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. **Install all items plumb,level, accurately fitted and free from any distortion, defects.**

B. **Provide for all erection loads,** sufficient temporary bracing, as required to maintain true alignment, until completion of erection, itallation of permanent attachments.

C. Field weld components as delineated within Contract Documents.

D. Perform all field welding in full accordance with AWS D1.1/D1.1M.

E. Obtain prior approval from Engineer of Record, for any Existing Project Site cutting or adjustments, not previously scheduled.

F. Following erection, prime all welds, abrasions and surfaces not previously shop primed.

3.04 TOLERANCES, PROTECTION

A. Maximum Variation From Plumb: 1/4 inch per story, non cumulative.

B. Maximum Offset From True Alignment: 1/4 inc.

C. Maximum Out of Position: 1/4 inch.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted handrails.

B. Stair railings and guardrails.

C. Free standing railings at steps.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

B. Section 04 20 00 - Unit Masonry.

C. Section 05 51 00 - Metal Stairs.

D. Section 06 20 00 - Finish Carpentry.

E. Section 08 80 00 - Glazing.

F. Section 09 21 16 - Gypsum Board Assemblies.

G. Section 09 91 13 - Exterior Painting.

H. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

F. AISC 207 - Standard for Certification Programs; 2023.

G. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.

H. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

I. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

J. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

K. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

L. ASTM B177/B177M - Standard Guide for Engineering Chromium Electroplating; 2011 (Reapproved 2021).

M. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

N. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube; 2022.

O. ASTM B429/B429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube; 2020.

P. ASTM B483/B483M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Tube and Drawn Pipe for General Purpose Applications; 2021.

Q. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

R. ASTM E2072 - Standard Specification for Photoluminescent (Phosphorescent) Safety Markings; 2024.

S. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

T. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

U. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025.

V. AWS D1.6/D1.6M - Structural Welding Code - Stainless Steel; 2017, with Amendment (2021).

W. AWS C3.4M/C3.4 - Specification for Torch Brazing; 2016.

X. AWS C3.5M/C3.5 - Specification for Induction Brazing; 2016, with Amendment (2017).

Y. AWS C3.9M/C3.9 - Specification for Resistance Brazing; 2020.

Z. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019, with Editorial Revision (2025).

AA. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

BB. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

CC. UL 1994 - Luminous Egress Path Marking Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Include the design engineer's seal and signature on each sheet of shop drawings.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated within the previous 12 months.

D. Designer's Qualification Statement.

E. Fabricator's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

B. Welder Qualifications: Welding processes and welding operators qualified within previous (8) Eight months.

C. Fabricator Qualifications:
   1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 207.
   2. A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.
   3. A company specializing in manufacturing products specified in this section, with not less than (10) Ten years documente experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Handrails and Railings:
   1. Alumi Guard: www.alumi-guard.com.
   2. ATR Technologies Inc; Aluminum Multi-Line Railing: http://www.atr-technologies.com.
   3. Avcon Railing Systems; Presidential Aluminum: www.avcon.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Non Weld Pipe Fittings:
   1. Kee Safety, Inc; Kee Klamp (steel): www.keesafety.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Metal Rail Infill:
   1. The G-S Company; www.g-sco.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Metal Cable Infill:
   1. The Cable Connection; Ultra-tec: www.thecableconnection.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Photoluminescent Handrail Strips:
   1. Safe-T-Nose, LLC.: www.safetnose.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Accessibility Compliant Handrail Brackets:
   1. Rakks Rangine Corporation; ADA Compliant HR-202: www.rakks.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 RAILINGS GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in full accordance with most stringent requirements of all applicable local codes.

B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

D. Allow for expansion and contraction of members and building movement without damage to connections or members.

E. Dimensions: See drawings for configurations and heights.
   1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.
   2. Intermediate Rails: 1-1/2 inches diameter, round.
   3. Intermediate Rails: 1-1/4 by 1 inch rectangular.
   4. Posts: 1-1/2 inches diameter, round.
   5. Posts: 1-1/2 inches square.
   6. Balusters: 1/2 inch square solid bar.

F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
   2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
   3. For anchorage to stud walls, provide backing plates, for bolting anchors.
   4. Posts: Provide adjustable flanged brackets.

G. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

H. Welded and Brazed Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
   1. Ease exposed edges to a small uniform radius.
   2. Welded Joints:
      a. Carbon Steel: Perform welding in full accordance with AWS D1.1/D1.1M.
      b. Stainless Steel: Perform welding in full accordance with AWS D1.6/D1.6M.
   3. Brass/Bronze Brazed Joints:
      a. Perform torch brazing in full accordance with AWS C3.4M/C3.4.
      b. Perform induction brazing in full accordance with AWS C3.5M/C3.5.
      c. Perform resistance brazing in full accordance with AWS C3.9M/C3.9.

I. Photoluminescent Handrail Strips: Manufacturer's standard clear anodized aluminum extrusion with embedded photoluminescent strip, complies with UL 1994 and ASTM E2072.
   1. Attachment: Provide manufacturer approved field applied adhesive, factory applied adhesive, and mechanical fasteners.
   2. Manufacturers:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.03 ALUMINUM MATERIALS

A. Aluminum Pipe: Schedule 40; ASTM B429/B429M, ASTM B241/B241M, or ASTM B483/B483M.

B. Aluminum Tube: Minimum wall thickness of 0.127 inch; ASTM B429/B429M, ASTM B241/B241M, or ASTM B483/B483M.

C. Solid Bars and Flats: ASTM B211/B211M.

D. Non-Weld Mechanical Fittings: Slip on cast aluminum, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

E. Welding Fittings: **No** exposed fasteners; cast aluminum.

F. Straight Splice Connectors: Concealed spigot; cast aluminum.

G. Exposed Fasteners: **No** exposed bolts or screws.

H. Exposed Fasteners: **Flush countersunk** screws or bolts; consistent with design of railing.

2.04 STEEL RAILING SYSTEM

A. Steel Tube: ASTM A500/A500M Grade B cold-formed structural tubing.

B. Steel Pipe: ASTM A53/A53M Grade B Schedule 80, black finish.

C. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

D. Welding Fittings: Factory or shop welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

E. Exposed Fasteners: No exposed bolts or screws.

F. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.

G. Straight Splice Connectors: Steel concealed spigots.

H. Plastic Handrail Cover: Extruded PVC.
   1. Profile: As indicated on drawings..
   2. Color(s): As selected by Architect from Manufacturer's full range of options.

I. Galvanizing: In accordance with requirements of ASTM A123/A123M.
   1. Touch Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic.

J. Shop and Touch Up Primer: SSPC-Paint 15, fully complying with all VOC limitations of those Local Authorities having Jurisdiction.

K. Chrome Plating: ASTM B177/B177M, nickel chromium alloy, including satin finish.

2.05 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components within largest practical sizes for delivery to Existing Project Site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
   1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
   3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Weld connections that cannot be shop welded due to size limitations.
   1. Weld in accordance with AWS D1.1/D1.1M.
   2. Match shop welding and bolting.
   3. Clean welds, bolted connections, and abraded areas.
   4. Touch up shop primer and factory applied finishes.
   5. Repair galvanizing with galvanizing repair paint per ASTM A780/A780M.

F. Install continuous plastic handrail cover. Heat weld all joints and trim smooth.

2.06 ALUMINUM, FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

B. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31 Clear anodic coating not less than 0.4 mils thick.

C. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.

D. Class I Color Anodized Finish: AAMA 611 AA-M12C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils thick.

E. Class II Color Anodized Finish: AAMA 611 AA-M12C22A32 Integrally colored anodic coating not less than 0.4 mils thick.

F. Class II Color Anodized Finish: AAMA 611 AA-M12C22A34 Electrolytically deposited colored anodic coating not less than 0.4 mils thick.

G. Pigmented Organic Coating System: AAMA 2603 polyester or acrylic baked enamel finish.

H. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system.

I. Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system.

J. Color: As selected by Architect from Manufacturer's full range of options.

K. Touch Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** field conditions are acceptable, and are ready to receive Work of this Section, prior to commencing any Work.

3.02 PREPARATION

A. **Clean and strip all** primed steel items to bare metal where site welding is required.

B. **Supply all items** required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

C. Apply (1) one coat bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.03 INSTALLATION

A. Install in full accordance with Manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Install railings in compliance with ADA Standards for accessible design at applicable locations.

D. Anchor railings securely to structure.

E. Field weld anchors as indicated on drawings. Touch up welds with primer. Grind welds smooth.

F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out of Position: 1/4 inch.

END OF SECTION

SECTION 06 10 53
MISCELLANEOUS ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof mounted curbs.

B. Roofing nailers.

C. Roofing cant strips.

D. Preservative treated wood materials.

E. Fire retardant treated wood materials.

F. Communications and electrical room mounting boards.

G. Concealed wood blocking, nailers, and supports.

H. Miscellaneous wood nailers, furring and grounds.

1.02 RELATED REQUIREMENTS

A. Section 0 30 00 - Cast in Place Concrete.

B. Section 09 21 16 - Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY"...

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).

D. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2024).

E. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing; 2019a.

F. ASTM E518/E518M - Standard Test Methods for Flexural Bond Strength of Masonry; 2022.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

H. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.

I. PS 1 - Structural Plywood; 2023.

J. PS 20 - American Softwood Lumber Standard; 2025.

K. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; 2019.

L. SPIB (GR) - Standard Grading Rules; 2021.

M. WCLIB (GR) - WCLB Standard Grading Rules for West Coast & Imported Softwood Lumber No.18; 2024.

N. WWPA G-5 - Western Lumber Grading Rules; 2025.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide technical data on wood preservative materials and application instructions.

C. Warranty Documentation: Submit Manufacturer warranty and ensure that forms have been completed in Owner's name and registered with Manufacturer.

1.05 DELIVERY, STORAGE, HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

1.06 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. **Correct all** defective Work, immediately.

C. Manufacturer Warranty: Provide Manufacturer's (10) Ten Year Warranty, for all materials and labor, commencing upon previously established Project SuSubstantial Completion Date.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
   3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Provide sustainably harvested wood; Reference Section 01 60 00 - Product Requirements for additional Content.

C. Provide wood harvested within a 500 mile radius of said ExistingProject site.

D. Lumber salvaged from deconstruction or demolition of existing buildings or structures is permitted in lieu of sustainably harvested lumber provided it is clean, denailed, and free of paint and finish materials, and other contamination; identify source.

E. Lumber fabricated from recovered timber is permitted in lieu of sustainably harvested lumber, unless otherwise noted, provided it meets the specified requirements for new lumber and is free of contamination; identify source.

2.02 DIMENSION LUMBER, CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

B. Grading Agency: West Coast Lumber Inspection Bureau; WCLIB (GR).

C. Grading Agency: Western Wood Products Association; WWPA G-5.

D. Sizes: Nominal sizes as indicated on drawings, S4S.

E. Moisture Content: S-dry or MC19.

F. Stud Framing for sizes 2 by 2 through 2 by 6:
   1. Species: Allowed under referenced grading rules.
   2. Species: Douglas Fir-Larch.
   3. Grade: No.2.

G. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No.2 or Standard Grade.
   2. Boards: Standard or No.3.

H. Sill Plates: 1-1/2 inch thick laminated strand lumber.
   1. Comply with AWPA U1 use category 2.

2. R-Value: 1.86 when tested in accordance with ASTM E518/E518M.
3. Products:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Window and Door Bucks: 1-1/2 inch thick laminated strand lumber.
1. Comply with AWPA U1 use category 2.
2. R-Value: 1.86 when tested in accordance with ASTM E518/E518M.
3. Products:
    a. Prebuck, LLC; Window and Door Buck: www.tremcosealants.com/#sle.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content..

J. Parapet Caps: 1-1/2 inch thick, laminated strand lumber.
1. Comply with AWPA U1 use category 2.
2. R-Value: 1.86 when tested in accordance with ASTM E518/E518M.
3. Products:
    a. Prebuck, LLC; Parapet Cap: www.tremcosealants.com/#sle.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.03 CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: PS 1, A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

B. Other Applications:
1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
3. Other Locations: PS 1, C-D Plugged or better.

2.04 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Anchors: Toggle bolt type for anchorage to hollow masonry.

B. Die Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.
2. Manufacturers:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

D. Sill Flashing: Reference Drawings and Contract Documents for additional Content.

E. Construction Adhesives: Adhesives complying with ASTM C557 or ASTM D3498.
1. Manufacturers:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. General Purpose Construction Adhesives:
1. Manufacturers:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Termite Shield:

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat exterior rough carpentry items.
      c. Do not use treated wood in direct contact with ground.
   3. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature, low hygroscopic type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Interior rough carpentry items are to be fire retardant treated.
      c. Treat rough carpentry items as indicated.
      d. **Do not** use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:
   1. Manufacturers:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber exposed to weather.
      c. Treat lumber in contact with roofing, flashing, or waterproofing.
      d. Treat lumber in contact with masonry or concrete.
      e. Treat lumber less than 18 inches above grade.
      f. Treat lumber in other locations as indicated.
   3. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
      b. Treat plywood in contact with roofing, flashing, or waterproofing.
      c. Treat plywood in contact with masonry or concrete.
      d. Treat plywood less than 18 inches above grade.

e. Treat plywood in other locations as indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Install sill gasket under sill plate bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION, GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.

3.04 ROOF RELATED, CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at roof openings except where prefabricated curbs are specified and where specifically indicated otherwise. Form corners by alternating lapping side members.

3.05 INSTALLATION, CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on edges and into studs in field of board.

1. At all fire rated walls, install board over wall board indicated as part of the fire rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.
4. Size and Location: As delineated within Contract Documents.

3.06 SITE APPLIED, WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment, all site sawn cuts, as required to fully comply with Manufacturer's written instructions.

B. Allow preservative to dry prior to erecting members.

3.07 CLEANING

A. Waste Disposal: Construction Waste Management and Disposal, Reference Contract Documnets and those requirements set forth by all Local Authorities having Jurisdiction for additional Content.
1. Fully comply, all applicaple regulations.
2. **Do not** burn any materials, within Existing Project Site.

B. **Do not** leave any wood, shavings, sawdust upon Existing Project Site.

C. **Prevent any** sawdust or wood shavings from entering drainage systems.

END OF SECTION

SECTION 06 16 00
SHEATHING

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. Shear Wall sheathing.
2. Roof / Floor Sheathing

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer of air-barrier and water-resistant glass-mat gypsum sheathing.

1. Installer shall be licensed by ABAA according to ABAA's Quality Assurance Program and shall employ ABAA-certified installers and supervisors on Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

B. Factory mark panels to indicate compliance with applicable standard.

2.2 SHEAR WALL SHEATHING

A. Plywood Sheathing: DOC PS 1, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 32/16.
2. Nominal Thickness: Not less than 1/2 inch.

B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 32/16.
2. Nominal Thickness: Not less than 1/2 inch

2.3 ROOF / FLOOR SHEATHING

A. Plywood Sheathing: DOC PS 1, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 40/20.
2. Nominal Thickness: Not less than 5/8 inch.

B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 40/20.
2. Nominal Thickness: Not less than 5/8 inch.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

B. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. ICC-ES evaluation report for fastener.

D. Use No. 10 self-tapping screws with a minimum head diameter of 0.333 inch in accordance with ASTM C1513 unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall Sheathing:
    a. Screw to cold-formed metal framing.
    b. Space panels 1/8 inch apart at edges and ends.

3.3 FIELD QUALITY CONTROL

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

B. Prepare test and inspection reports.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood door frames.

C. Wood casings and moldings.

D. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

A. Section 08 14 16 - Flush Wood Doors.

B. Section 09 91 13 - Exterior Painting.

C. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

C. ANSI A208.1 - American National Standard for Particleboard; 2022.

D. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

E. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

G. ASTM C1036 - Standard Specification for Flat Glass; 2025.

H. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

J. AWI (QCP) - Quality Certification Program; Current Edition.

K. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

L. AWMAC (GIS) - Guarantee and Inspection Services Program; Current Edition.

M. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

N. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.

O. BHMA A156.9 - Cabinet Hardware; 2020.

P. GSA CID A-A-1936 - Adhesives, Contact, Neoprene Rubber; 1996a (Validated 2013).

Q. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

R. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

S. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress; 2023.

T. PS 1 - Structural Plywood; 2023.

U. PS 20 - American Softwood Lumber Standard; 2025.

V. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork; 2024.

W. WI (CCP) - Certified Compliance Program (CCP); Current Edition.

X. WI (CSIP) - Certified Seismic Installation Program (CSIP); Current Edition.

Y. WI (MCP) - Monitored Compliance Program (MCP); Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all Work with plumbing rough-in, electrical rough-in, installation of associated and adjacent components, and as directed by Architect.

B. Sequence installation, as required to ensure utility connections are achieved with in an orderly and expeditious manner.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content

B. Product Data:
   1. Provide Manufacturer's product data, storage and handling instructions for factory-fabricated units.
   2. Provide data on fire retardant treatment materials and application instructions.
   3. Provide Manufacturer's instructions for attachment and finish hardware..

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

D. Samples: Submit two samples of finish plywood, (18) eighteen inches square, accurtely illustrating wood grain and finish.

E. Samples: Submit Cap, Base, and Column Shaft, one half full size, accurately illustrating construction and finish.

F. Certificate: Submit all labels and certificates, as required by quality assurance, control programs.

G. Manufacturer's Instructions: Provide manufacturer's installation instructions for factory-fabricated units.

1.06 QUALITY ASSURANCE

A. Fabricators:

B. Fabricator Qualifications: Company specializing in fabricating those Products specified, this Section with minimum (15) Fifteen years, documented experience.
   1. Company with at least (3) Three projects within past (10) Ten years, with value of woodwork within 20 percent of cost of woodwork for this particular Project.
   2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of this particular Project.
   3. Single Source Responsibility: Provide and install all Work, this Section from single fabricator.

C. Quality Certification:
   1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
      a. This AWI (QCP) Project shall be registered.
   2. Comply with AWMAC (GIS) woodwork association quality certification service/program in accordance with requirements for work specified in this section.
   3. Comply with WI (CCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section www.woodworkinstitute.com/#sle.
   4. Provide labels or certificates indicating that work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   5. Provide designated labels on shop drawings as required by certification program.
   6. Provide designated labels on installed products as required by certification program.

7. Submit certifications upon completion of installation that verifies all Work is in full compliance with Contract Documents.

1.07 MOCK UPS

A. Provide column wrap mock up, full size, accurately illustrating construction and finish.

B. Reference Section 01 40 00 - Quality Requirements for additional content.

C. Locate as directed by Architect.

D. **Mock ups may not remain as portion of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver factory fabricated units to project site in original packages, containers or bundles bearing brand name and identification.

B. Store finish carpentry items under cover, elevated above grade, and in a dry, well ventilated area not exposed to heat or sunlight.

C. Protect from moisture damage.

D. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

C. Exterior Woodwork Items:
   1. Window Casings and Moldings: Softwood; prepare for paint finish.
   2. Soffits and Fascias: Prepare for paint finish.
   3. Enclosing Soffit Spaces: As detailed.
   4. Enclosing Structural Members: Softwood lumber; "PT" preservative treated.
   5. Handrails: Redwood; prepare for stained and sealed finish.
   6. Brackets, Finials, and Pediments: Prepare for paint finish.
   7. Bench Seats and Backs: "PT" preservative treated.

D. Interior Woodwork Items:
   1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.
   2. Door, Glazed Light, and Pocket Door Frames: White birch; prepare for paint finish.
   3. Window Sills: Clear fir; prepare for transparent finish.
   4. Stairs, Balustrades, and Handrails: Clear fir; prepare for stained finish.
   5. Suspended Wood Ceiling System: "FR-S" treated.
   6. Glazed Screen Partition System: Clear fir; prepare for transparent finish.
   7. Valance Work: Clear fir; prepare for paint finish.
   8. Loose Shelving: Birch plywood; prepare for paint finish.
   9. False Box Beams: Knotty Tight Knot Cedar; unfinished.

E. Factory Fabricated Wood Columns:
   1. Species: as indicated on drawings.
   2. Exterior Capitals and Bases: Wood.
   3. Ornamental Capitals for Higher Orders: Wood.
   4. Plinths: Wood.
   5. Products:
      a. Royal Corinthian; RoyalClassic Wood Columns: www.royalcorinthian.com
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional content.

F. Factory Fabricated Cellular PVC Column Covers:
   1. Column Style Shape: as delineated within Contract Documents
   2. Column Style Face: as delineated within Contract Documents.
   3. Cap Style: as delineated within Contract Documents.
   4. Base Style: as delineated within Contract Documents.
   5. Column Bottom Shaft Width: as delineated within Contract Documents.
   6. Column Overall Height: as delineated within Contract Documents.
   7. Column Wall Thickness: as delineated within Contract Documents.
   8. Products:
      a. Royal Corinthian; RoyalWrap PVC Column Wraps: www.royalcorinthian.com
      b. Versatex Building Products, LLC; Versawrap: www.versatex.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional content.

G. Manufactured Attic Stairs:
   1. Products:
      a. FAKRO America LLC; Attic Ladder LWF: www.fakrousa.com
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 SUSTAINABILITY CHARACTERISTICS

A. Provide sustainably harvested wood, certified and labeled; Reference Section 01 10 00 - Product Requirements for additional Content.

B. Provide wood harvested within specified radius of Existing Project Site, Reference Section 01 60 00 - Product Requirements for aditional Content.

C. Provide composite wood Products fully complying with all applicable composite wood indoor emission requirements, per those Local Authorities Having Jurisdiction.

2.03 LUMBER MATERIALS

A. Softwood Lumber: maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.
   1. Grading: In accordance with rules certified by ALSC; www.alsc.org.

B. Hardwood Lumber: maximum moisture content of 6 percent ; with vertical grain , of quality suitable for transparent finish.
   1. Grading: In accordance with NHLA G-101 Grading Rules; www.nhla.com.

2.04 SHEET MATERIALS

A. Softwood Plywood, Not Exposed to View: Any face species, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.

B. Softwood Plywood, Exposed to View: Face species as indicated, plain sawn, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
   1. Grading: Certified by the American Plywood Association.

C. Hardwood Plywood: Face species as indicated, plain sawn, book matched, medium density fiberboard core; HPVA HP-1 Front Face Grade AA, Back Face Grade 1, glue type as recommended for application.

D. Prefinished Paneling: , V-cut vertical joint scoring; 3/16 inch thick, finished as gloss.

E. Particleboard: ANSI A208.1 Composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.

F. Hardboard: ANSI A135.4 Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S).

G. Pegboard: Pressed wood fiber with resin binder, standard grade; 1/8 inch thick, with holes spaced at 1 inch on center in both directions.

2.05 PANEL CORE MATERIALS

A. Medium Density Fiberboard (MDF): Composite panel composed of cellulosic fibers, additives, and bonding system; cured under heat and pressure; comply with ANSI A208.2.
   1. Grade: 115; moisture resistance: MR10.
   2. Panel Thickness: 1 inch.
   3. Products:
      a. Roseburg Forest Products; Medium Density Fiberboard: www.roseburg.com.
      b. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

B. Basic Hardboard: Panel manufactured from inter felted lignocellulosic fibers consolidated under heat and pressure; comply with ANSI A135.4.
   1. Class: Tempered; surface: Smooth one side (S1S).
   2. Nominal Thickness: 1/4 inch.

2.06 PLASTIC LAMINATE MATERIALS

A. Plastic Laminate: NEMA LD 3, color as selected by Architect from Manufacturer's full range of options.
   1. Products:
      a. Arborite: www.arborite.com
      b. Panolam Industries International, Inc.: www.panolam.com
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Low Pressure Laminate: pattern and gloss surface texture as directed by Architect.

C. Laminate Backing Sheet: NEMA LD 3, BKL; undecorated plastic laminate

D. Laminate Adhesive: Type recommended by laminate manufacturer to suit application; not containing formaldehyde or other volatile organic compounds.

2.07 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Adhesive for factory fabricated units: Manufacturer's recommended adhesive for application.

C. Fasteners: Of size and type to suit application; as indicated on drawings, finish in all concealed and all exposed locations.

D. Fasteners for Exterior Applications: Stainless steel; length required to penetrate wood substrate 1-1/2 inch minimum.

E. Concealed Joint Fasteners: Threaded steel.

F. Metal Z Shaped Support Clips: Paired, cleated, structural anchorage components applied to back of finish carpentry items and walls for mounting.
   1. Thickness: 0.115 inch.
   2. Height: 1.25 inches.
   3. Stand Off: 0.240 inch.
   4. Lift Off: 0.375 inch.
   5. Width: 72 inches.
   6. Products:
      a. Eagle Aluminum; Eagle Z-Clips: www.eagle-aluminum.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.08 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Lumber for shimming and blocking.

C. Plastic Edge Trim: Extruded convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness; color as directed by Architect from Manufacturer's full range.

D. Aluminum Trim and Mouldings: Extruded, alloy 6063 T5.
   1. Type: Profile as selected from manufacturer's standard range.
   2. Flange: 0.188 inch.
   3. Depth: 3/4 inch.
   4. Finish: Clear anodized.
   5. Products:
      a. Eagle Aluminum; Architectural Woodwork Trim: www.eagle-aluminum.com.
      b. Flannery, Inc; Metal Edge Trim: www.flannerytrim.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Aluminum Edge Trim: Extruded convex shape; smooth surface finish; self locking serrated tongue; of width to match component thickness; natural mill finish.

F. Glass: Type re: Specifications Section 08 80 00 Glazing.

G. Plain Glass: ASTM C1036 annealed float glass, clear, 6 mm thick minimum.

H. Safety Glass: ASTM C1048, fully tempered; clear; 1/8 inch thick, minimum.

I. Safety Glass: Laminated glass complying with 16 CFR 1201 and ANSI Z97.1; clear; nominally 6 mm thick.

J. Primer: Alkyd primer sealer.

K. Wood Filler: Solvent base, tinted to match surface finish color.

L. Attachment Accessories: as indicated on drawings and directed by Architect.

2.09 HARDWARE

A. Hardware: Comply with BHMA A156.9.

B. Shelf Standards:

C. Shelf Brackets:

D. Countertop Support Brackets: Fixed, L shaped, corner reinforced, face of stud mounting.
   1. Material: Steel.
      a. Finish: Manufacturer's standard, factory-applied, textured powder coat.
      b. Color: Black.
      c. Height: 5 inches.
      d. Support Length: 8 inches.
   2. Products:
      a. A&M Hardware, Inc; Standard Brackets: www.aandmhardware.com
      b. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

E. Countertop Support Brackets: Fixed, "L" shaped, face of stud mounting.
   1. Material: Steel; T-shape cross section.
      a. Finish: Manufacturer's standard, factory applied, textured powder coat.
      b. Color: Black.
      c. Support Length: (12) Twelve inches.
   2. Products:
      a. A&M Hardware, Inc; Hybrid Brackets: www.aandmhardware.com
      b. A&M Hardware, Inc; Heavy-Duty Hybrid Brackets: www.aandmhardware.com
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Vanity Brackets: Fixed, ADA-Compliant, face of stud mounting.

1. Material: Steel; formed compound shapes.
    a. Finish: Manufacturer's standard, factory applied, textured powder coat.
    b. Color: Black.
2. Material: Stainless steel; formed, compound shapes.
    a. Finish: Brushed finish.
3. Material: Aluminum angles.
4. Products:
    a. A&M Hardware, Inc; ADA Vanity Brackets: www.aandmhardware.com
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Countertop Brackets: Fixed, L-shaped, top of knee wall mounting.
1. Material: Steel plates.
2. Height: (12) Twelve inches.
3. Plate Thickness and Width: 3/8 inch by 2-1/2 inches.

H. Vanity Brackets: Fixed, cantilevered support leg, face of stud mounting.
1. Materials: Steel L-shapes.
2. Finish: Manufacturer's standard, factory applied, textured powder coat.
3. Color: Black.
4. Angle Depth: (2) Two inches.
5. Width: (28) Twenty Eight inches.
6. Support Length: (18) Eighteen inches.
7. Products:
    a. A&M Hardware, Inc; Floating Vanity Brackets: www.aandmhardware.com

I. Countertop Brackets: Concealed vertical leg, side of stud mounting.
1. Material: Steel plates.
    a. Color: Black.
    b. Vertical Leg: (12) Twelve inches.
    c. Support Plate Length: (8) Eight inches.
    d. Plate Width: 2 1/2 inches.
2. Products:
    a. Centerline Brackets; Floating Wall Mount: www.countertopbracket.com
    b. Substitutions: Reference Sectopm 01 60 00 - Product Requirements for additional Content.

J. Track and Hanger Systems
1. Products:
    a. Accuride International Inc; 116RC Heavy-Duty Linear Track System: www.accuride.com
    b. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

2.10 WOOD TREATMENT

A. Factory Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.

B. Fire Retardant Treatment (FR-S Type): Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.

C. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 treatment using waterborne preservative with 0.25 percent retainage.

D. Water Repellent Preservative Treatment by Dipping Method: WDMA I.S. 4, with 0.25 percent retainage.

E. Wood Preservative (Surface Application):

F. Shop pressure treat wood materials requiring fire rating to concealed wood blocking.

G. Provide identification on fire retardant treated material.

H. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

I. Redry wood after pressure treatment, per Manufactutrer's instructions

2.11 SITE FINISHING, MATERIALS

A. Stain, Shellac, Varnish, and Finishing Materials: Comply with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Field Finishing: Reference Section 09 91 23 Interior Painting for additional Content.

2.12 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.

C. Cap exposed plastic laminate finish edges with aluminum trim.

D. Shop prepare and identify components for book match grain matching during site erection.

E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

F. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

G. Apply laminate backing sheet to reverse face of plastic laminate finished surfaces.

2.13 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Stain: As selected by Architect from Manufacturer's full range of options.
      c. Sheen: As selected by Architect from Manufacturer' s full range of options.
   2. Opaque:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Color: As selected by Architect from Manufacturer's full range of options.
      c. Sheen: As selected by Architect from Manufacturer's full range of options.

E. Stain, seal, and varnish exposed to view surfaces. Brush apply only.

F. Seal internal surfaces and semi-concealed surfaces. Brush apply only.

G. Prime paint surfaces in contact with cementitious materials.

H. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of all backing and support framing.

B. Confirm all mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Install allcustom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Install all factory fabricated units in full accordance with Manufacturer's written installation instructions.

C. Set and secure materials and components in place, plumb and level.

D. Carefully scribe all work abutting any other components, with maximum gaps of 1/32 inch. **Do not** use additional overlay trim to conceal larger gaps.

E. Install prefinished paneling with full bed contact adhesive applied to substrate.

F. Install all hardware in full accordance with Manufacturer's instructions.

3.03 SITE APPLIED, WOOD TREATMENT

A. Apply all preservative treatment in full accordance with Manufacturer's instructions.

B. Brush apply one coats of preservative treatment upon all wood, in contact with cementitious materials. Treat all Existing Project Site cuts.

C. Allow all preservative to fully dry, prior to erecting any members.

3.04 PREPARATION, SITE FINISHING

A. Set exposed fasteners. Apply wood filler within all exposed fastner locations, sand alll Work smooth.

B. Before beginning installation, prime paint all surfaces, all items, assemblies, in contact with any cementitious materials.

3.05 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

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SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specifically fabricated Architectural Wood Casework.

B. Cabinet hardware.

C. Factory finishing.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 Miscellaneous Rough Carpentry.

B. Section 09 91 13 Interior Painting.

C. Section 12 36 00 Countertops.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) Architectural Woodwork Standards, Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 Administrative Requirements for additional Content.

B. Shop Drawings: Delineate all materials, component profiles, fastening methods, devices, jointing and any accessories particular to this Project.

1. Minimum Scale of Detail Drawings: 1-1/2” to 1 foot.
2. Provide all information required via AWI/AWMAC/WI (AWS), Current Edition.
3. Present Certification Label.

C. Product Data: Provide detailed Product Data, including cut sheets for all hardware and accessories, particular to this Project.

D. Product Samples: Submit (2) Two Product Samples, Manufacturer’s standard size, as required to accurately represent construction, color, finish, pattern, operation, all accessories and all hardware.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in Work delineated within this Section, minimum (15) Fifteen years documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Deliver all Products to Existing Project Site, within Manufacture’s packaging, including identification labels, tracking numbers particular to this Project.

B. Store all Products above floor surface, within climate controlled area of Building and protect from damage, Construction activities.

1.07 FIELD CONDITIONS

A. Prior to beginning Work, during installation and following completion of said Scope of Work, maintain temperature, humidity conditions, at same levels required for building occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Grade: Unless directed otherwise, provide Products of quality Specified within AWI/AWMAC/WI (AWS), Current Edition, for Premium Grade.

B. Plastic Laminate Faced Cabinets: Custom Grade.

C. Cabinets:

1. Finish, Exposed Exterior Surfaces: Decorative Laminate.
2. Finish, Exposed Interior Surfaces: Decorative Laminate.
3. Finish, Concealed Surfaces: Manufacture's Standard.
4. Door and Drawer Front Edge Profiles: Square edge, including applied band.
5. Door and Drawer Front Retention Profiles: Removable stop.
6. Casework Construction Type: Type A Frameless.
7. Interface Style for Cabinet and Door: Style 1 Overly, flush overlay.
8. Grained Face Layout for Cabinet and Door Fronts: Flush panel.
    a. Custom Grade: Doors, drawer fronts and false fronts, wood grain shall run and match vertically within each cabinet.
9. Cabinet Design Series: As identified within Contract Documents.
10. Adjustable Shelf Loading: Minimum (75) Seventy Five pounds per square foot.
11. Drawer Side Construction: Manufacturer's Standard.

2.02 WOOD BASED COMPONENTS

A. **Wood fabricated from old growth lumber will not be permitted.**

B. Use wood type as delineated within Contract Documents.

2.03 LAMINATE MATERIALS

A. Manufacturers:

1. Use only those Manufacturers identified within Contract Documents.
2. Substitutions: Reference Section 01 60 00 Product Requirements for additional Content.

B. Provide specific types as scheduled:

1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, all color selections as chosen by Architect from Manufacturer's full range of options.
2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, all color selections as chosen by Architect from Manufacturer's full range of options.

2.04 ACCESSORIES

A. Plastic Edge Banding: Extruded PVC, flat shaped, smooth finish, self locking serrated tongue, as required to match component thickness.
   1. Color: As selected by Architect from Manufacturer's full range of options.
   2. Use as directed by Architect.

B. Fasteners: Size and type, as required, this particular Project.

C. Bolts, Nuts, Washers, Lags, Pins and Screws: type and size, required, this particular Project. Galvanized or chrome finish within all concealed locations, stainless steel or chrome finish, all locations exposed to view.

D. Concealed Joint Fasteners: Threaded steel.

E. Grommets: Manufacturer's premium plastic, color as selected by Architect from Manufacturer's full range of options.

2.05 HARDWARE

A. Adjustable Shelf Supports: Heavy Duty Type, side mounted system utilizing multiple holes, as required for pin supports, coordinated self rests, satin chrome finish, (1) one inch spacing adjustments.

B. Drawer, Door Pulls: U shaped wire pull, steel, satin finish.
   1. Product: PO256A as Manufactured by Liberty.

C. Cabinet Locks: Keyed cylinder, three (3) keys per lock, master keyed, steel, satin finish.

D. Catches: Magnetic type.

E. Drawer Slides:
   1. Type: Heavy Duty, Full extension, including overtravel.
   2. Static Load Capacity: Heavy Duty, Commercial Grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Features: Self closing, stay closed type.

F. Hinges: Heavy Duty, European style concealed self closing type, steel, satin finish.
   1. Products:
      a. Grass America, Inc.: www.grassusa.com.
      b. Julius Blum, Inc.: ww.blum.com.

2.06 FABRICATION

A. Assembly: Shop assemble all casework, as required for delivery to Existing Project Site.

B. Edging: Fit all shelves, doors, material as delineated within Contract Documents. **Use no more than one piece edging, any single length.**

C. Fitting: When necessary to cut and fit within Existing Project Site, provide all materials, as required to provide ample allowance for said cutting. Provide matching trim, all scribing, cutting locations.

D. Plastic Laminate: Apply plastic laminate finish within full uninterrupted sheets. Fit all corners, hairline joints, secure only with concealed fasteners. Slightly bevel all arises. Locate counter butt joints, minimum (48) forty eight inches from sink cut outs.

1. Appy laminate backing sheet to reverse side, all plastic laminate finished surfaces.
2. Enclose all exposed plastic laminate finish edges with plastic trim.

E. Matching Wood Grain: Fully comply with all requirements, those Standards identified within Contract Documents.

F. Provide all cutouts, as required for utilities, accessories, this particular Project. Field confirm all locations. Seal tight all cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm adequacy of all backing and support framing, prior to commencing any Work, this Section.

B. Verify locations and sizes of all utility rough in Work associated, this Section.

3.02 INSTALLATION

A. Set and secure all Work in place, as required to ensure plumb, level and rigid installation.

B. Provide fixture attachments within all concealed locations, as required for any wall mounted components.

C. Install only concealed joint fasteners, as required to align and secure all adjoining cabinets.

D. Carefully scribe all casework abutting any other components, as required to ensure maximum gaps of 1/32 inch**. Do not use additional overlay trim for this Work.**

E. Secure cabinets to floor surface, as required to implement appropriate angles and anchorage devices.

F. Countersink all anchorage devices. Conceal via solid wood plugs of a species, as required to match adjacent wood finish and flush with all surrounding surfaces.

3.03 ADJUSTING

A. Adjust all operating parts, as required to provide only correct, smooth functioning.

3.04 CLEANING, PROTECTION

A. Thoroughly clean all Work, this Section.

B. Protect all Work, this Section, from damage.

C. Replace all damaged Work, this Section, immediately.

END OF SECTION

SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 01 70 00 - Execution and Closeout Requirements:

B. Section 09 21 16 - Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

B. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.

C. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

D. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2024.

E. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2024.

F. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2024.

G. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-Story Test Apparatus; 2025b.

H. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023a, with Editorial Revision (2024).

I. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

J. ITS (DIR) - Directory of Listed Products; Current Edition.

K. FM 4991 - Approval Standard of Firestop Contractors; 2013.

L. FM (AG) - FM Approval Guide; Current Edition.

M. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

N. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

O. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

P. UL (DIR) - Online Certifications Directory; Current Edition.

Q. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.

E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Certificate from authority having jurisdiction indicating approval of materials used.

H. Manufacturer's qualification statement.

I. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in Manufacturing those Products specified within this Section, minimum (15) Fifteen years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Trained by manufacturer.
   2. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
   3. Verification, minimum (15) Fifteen years documented experience installing Work of this type.
   4. Verification, minimum (10) Ten satisfactorily completed projects of comparable size and type.
   5. Licensed by those Local Authorities having Jurisdiction.

1.06 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
   2. Where firestopping is intended to fill a linear opening, install at least 1 linear foot of firestopping.

C. Obtain approval of those Local Authorities having Jurisdicton, before proceeding.

D. If accepted, mock up will represent minimum standard for this Work.

E. **Mock ups may not remain as portion of permanent Work, this particular Project.**

1.07 FIELD CONDITIONS

A. Comply with all firestopping Manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide proper ventilation within all areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. 3M Fire Protection Products: www.3m.com/firestop.
   2. CEMCO; HOTROD Type-X Compressible Firestopping: www.cemcosteel.com.
   3. Hilti, Inc.:www.hilti.com.

4. Tremco Commercial Sealants & Waterproofing; TREMstop Acrylic: www.tremcosealants.com.
5. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Acoustical Smoke Protection Gasket Manufacturers:
1. CEMCO; Sound Gasket: www.cemcosteel.com.
2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.

C. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

E. Fire Ratings: Reference Contract Documents for additional Content.

2.03 FIRESTOPPING, ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
1. Movement: Provide systems that have been tested to show movement capability as indicated.
2. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
3. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.

B. Head of Wall (HW) Joint System Firestopping at Joints Between Fire Rated Wall Assemblies and Non Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
1. Movement: Provide systems that have been tested to show movement capability as indicated.

C. Floor to Floor (FF), Floor to Wall (FW), Head of Wall (HW), and Wall to Wall (WW) Joints, Except Perimeter, Where Both Are Fire Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
1. Movement: Provide systems that have been tested to show movement capability as indicated.
2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

E. Acoustically Rated Firestopping: Provide system tested in accordance with ASTM E90 with STC rating of 50, minimum.

2.04 FIRESTOPPING, PERIMETER CONTAINMENT

A. Perimeter Joint Systems That Have Not Been Tested For Movement Capabilities (Static-S):
   1. 2 Hour Construction: UL System CW-S-0002; Specified Technologies Inc. AS200 Elastomeric Spray.
   2. 2 Hour Construction: UL System CW-S-0002; Specified Technologies Inc. Fast Tack Firestop Spray.
   3. 2 Hour Construction: UL System CW-S-0003; Specified Technologies Inc. Fast Tack Firestop Spray.
   4. 2 Hour Construction: UL System CW-S-0007; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   5. 2 Hour Construction: UL System CW-S-2015; RectorSeal MetaCaulk 1200 Spray.
   6. 2 Hour Construction: UL System CW-S-2017; RectorSeal MetaCaulk 1200 Spray.

B. Perimeter Joint Systems That Have Movement Capabilities (Dynamic-D):
   1. 3 Hour Construction: UL System CW-D-2005; Specified Technologies Inc. Fast Tack Firestop Spray.
   2. 2 Hour Construction: UL System CW-D-1004; Specified Technologies Inc. AS200 Elastomeric Spray.
   3. 2 Hour Construction: UL System CW-D-1004; Specified Technologies Inc. Fast Tack Firestop Spray.
   4. 2 Hour Construction: UL System CW-D-1011; Specified Technologies Inc. Fast Tack Firestop Spray.
   5. 2 Hour Construction: Intertek System BP-120-03; RectorSeal MetaCaulk 1200 Spray.
   6. 2 Hour Construction: Intertek System BP-120-05; RectorSeal MetaCaulk 1200 Spray.
   7. 2 Hour Construction: Intertek System BP-120-09; RectorSeal MetaCaulk 1200 Spray.
   8. 2 Hour Construction: Intertek System BP-120-12; RectorSeal MetaCaulk 1200 Spray.
   9. 2 Hour Construction: Intertek System BP-120-14; RectorSeal MetaCaulk 1200 Spray.
   10. 2 Hour Construction: UL System CW-D-2014; RectorSeal MetaCaulk 1200 Spray.
   11. 2 Hour Construction: UL System CW-D-2016; RectorSeal MetaCaulk 1200 Spray.
   12. 2 Hour Construction: UL System CW-D-2018; RectorSeal MetaCaulk 1200 Spray.
   13. 2 Hour Construction: UL System CW-D-2042; Specified Technologies Inc. Fast Tack Firestop Spray.
   14. 2 Hour Construction: UL System CW-D-2047; RectorSeal MetaCaulk 1200 Spray.
   15. 2 Hour Construction: UL System CW-D-2049; RectorSeal MetaCaulk 1200 Spray.

2.05 FIRESTOPPING, FLOOR TO FLOOR, FLOOR TO WALL, HEAD OF WALL, WALL TO WALL JOINTS

A. Concrete and Concrete Masonry Walls and Floors:
   1. Floor to Floor Joints:
      a. 4 Hour Construction: UL System FF-D-0023; RectorSeal MetaCaulk 150+.
      b. 3 Hour Construction: UL System FF-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
      c. 3 Hour Construction: UL System FF-D-1008; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
      d. 3 Hour Construction: UL System FF-D-1024; RectorSeal MetaCaulk 1200 Spray.
      e. 3 Hour Construction: UL System FF-D-1025; Specified Technologies Inc. AS200 Elastomeric Spray.
      f. 3 Hour Construction: UL System FF-D-1027; RectorSeal MetaCaulk 150+.
      g. 3 Hour Construction: UL System FF-D-1077; RectorSeal MetaCaulk 835+.
      h. 2 Hour Construction: UL System FF-D-0024; RectorSeal MetaCaulk 150+.
      i. 2 Hour Construction: UL System FF-D-0053; RectorSeal MetaCaulk Joint Strip.
      j. 2 Hour Construction: UL System FF-D-0084; RectorSeal MetaCaulk Joint Strip.
      k. 2 Hour Construction: UL System FF-D-1013; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

l. 2 Hour Construction: UL System FF-D-1085; Tremco, TREMstop Acrylic Firestop Sealant.

2. Head of Wall Joints at Concrete/Concrete Masonry Wall to Concrete Over Metal Deck Floor:
   a. 3 Hour Construction: UL System HW-D-0139; Specified Technologies Inc. AS200 Elastomeric Spray.
   b. 2 Hour Construction: UL System HW-D-0039; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   c. 2 Hour Construction: UL System HW-D-0058; RectorSeal MetaCaulk 1200 Spray.
   d. 2 Hour Construction: UL System HW-D-0149; RectorSeal MetaCaulk 150+.
   e. 2 Hour Construction: UL System HW-D-0181; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   f. 2 Hour Construction: UL System HW-D-1037; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
3. Head of Wall Joints at Concrete/Concrete Masonry Wall to Concrete Floor:
   a. 3 Hour Construction: UL System HW-D-0041; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   b. 3 Hour Construction: UL System HW-D-0312; Specified Technologies Inc. SIL Silicone Sealant.
   c. 3 Hour Construction: UL System HW-D-1034; Specified Technologies Inc. AS200 Elastomeric Spray.
   d. 3 Hour Construction: UL System HW-D-1058; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   e. 3 Hour Construction: UL System HW-D-0166; RectorSeal MetaCaulk 1200 Spray.
   f. 2 Hour Construction: UL System HW-D-0268; Hilti CP 606 Flexible Firestop Sealant.
   g. 2 Hour Construction: UL System HW-D-0312; Specified Technologies Inc. SIL Silicone Sealant.
4. Concrete/Concrete Masonry Wall to Wall Joint Systems That Have Not Been Tested For Movement Capabilities (Static-S):
   a. 3 Hour Construction: UL System WW-S-0038; Specified Technologies Inc. SIL Silicone Sealant.
   b. 3 Hour Construction: UL System WW-S-0049; Specified Technologies Inc. SIL Silicone Sealant.
   c. 2 Hour Construction: UL System WW-S-1025; RectorSeal MetaCaulk 835+.
   d. 2 Hour Construction: UL System WW-S-1038; RectorSeal MetaCaulk 835+.
5. Concrete/Concrete Masonry Wall to Wall Joint Systems That Have Movement Capabilities (Dynamic-D):
   a. 4 Hour Construction: UL System WW-D-0054; RectorSeal MetaCaulk Joint Strip.
   b. 3 Hour Construction: UL System WW-D-0023; RectorSeal MetaCaulk 1200 Spray.
   c. 3 Hour Construction: UL System WW-D-0095; RectorSeal MetaCaulk 150+.
   d. 3 Hour Construction: UL System WW-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
   e. 3 Hour Construction: UL System WW-D-1007; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   f. 3 Hour Construction: UL System WW-D-1028; RectorSeal MetaCaulk 1200 Spray.
   g. 3 Hour Construction: UL System WW-D-1037; Specified Technologies Inc. AS200 Elastomeric Spray.
   h. 2 Hour Construction: UL System WW-D-0025; RectorSeal MetaCaulk 1200 Spray.
   i. 2 Hour Construction: UL System WW-D-0027; RectorSeal MetaCaulk 150+.
   j. 2 Hour Construction: UL System WW-D-0110; RectorSeal MetaCaulk 150+.
   k. 2 Hour Construction: UL System WW-D-1077; Tremco, TREMstop Acrylic Firestop Sealant.
   l. 2 Hour Construction: UL System WW-D-0017; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

m. 2 Hour Construction: UL System WW-D-0032; Hilti CP 606 Flexible Firestop Sealant.

B. Gypsum Board Walls:
   1. Wall to Wall Joints That Have Not Been Tested For Movement Capabilities (Static-S):
      a. 2 Hour Construction: UL System WW-S-0063; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      b. 2 Hour Construction: UL System WW-S-0089; RectorSeal MetaCaulk 150+.
      c. 1 Hour Construction: UL System WW-S-0063; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   2. Wall to Wall Joints That Have Movement Capabilities (Dynamic-D):
      a. 3 Hour Construction: UL System WW-D-0101; RectorSeal MetaCaulk 150+.
      b. 2 Hour Construction: UL System WW-D-0180; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      c. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
      d. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
   3. Head of Wall Joints at Underside of Steel Beam and Concrete Over Metal Deck Floor with Sprayed On Fireproofing:
      a. 2 Hour Construction: UL System HW-D-0252; Specified Technologies Inc. AS200 Elastomeric Spray.
      b. 2 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
      c. 1 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   4. Head of Wall Joints at Underside of Flat Concrete:
      a. 4 Hour Construction: UL System HW-D-0108; RectorSeal MetaCaulk 1200 Spray.
      b. 2 Hour Construction: UL System HW-D-0044; Specified Technologies Inc. AS200 Elastomeric Spray.
      c. 2 Hour Construction: UL System HW-D-0079; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
      d. 2 Hour Construction: UL System HW-D-0371; Specified Technologies Inc. SpeedFlex Joint Profile System.
      e. 2 Hour Construction: UL System HW-D-0689; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      f. 2 Hour Construction: UL System HW-D-0696; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      g. 2 Hour Construction: UL System HW-D-0798; RectorSeal Blaze Foam.
      h. 2 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
      i. 2 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
      j. 2 Hour Construction: UL System HW-D-0016; Tremco, TREMstop Acrylic Firestop Sealant.
      k. 2 Hour Construction: UL System HW-D-0017; Tremco, TREMstop Acrylic Firestop Sealant.
      l. 2 Hour Construction: UL System HW-D-1072; Tremco, TREMstop Acrylic Firestop Sealant.
      m. 1 Hour Construction: UL System HW-D-0079; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
      n. 1 Hour Construction: UL System HW-D-0371; Specified Technologies Inc. SpeedFlex Joint Profile System.
      o. 1 Hour Construction: UL System HW-D-0689; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      p. 1 Hour Construction: UL System HW-D-0696; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      q. 1 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

r. 1 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
s. 1 Hour Construction: UL System HW-D-0016; Tremco, TREMstop Acrylic Firestop Sealant.

5. Head of Wall Joints at Concrete Over Metal Deck:
   a. 2 Hour Construction: UL System HW-D-0034; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   b. 2 Hour Construction: UL System HW-D-0043; Specified Technologies Inc. AS200 Elastomeric Spray.
   c. 2 Hour Construction: UL System HW-D-0099; Specified Technologies Inc. SpeedFlex Joint Profile System.
   d. 2 Hour Construction: UL System HW-D-0144; RectorSeal MetaCaulk 150+.
   e. 2 Hour Construction: UL System HW-D-0363; Specified Technologies Inc. SpeedFlex Joint Profile System.
   f. 2 Hour Construction: UL System HW-D-0365; Specified Technologies Inc. SpeedFlex Joint Profile System.
   g. 2 Hour Construction: UL System HW-D-0548; Specified Technologies Inc. SpeedFlex Joint Profile System.
   h. 2 Hour Construction: UL System HW-D-0749; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   i. 2 Hour Construction: UL System HW-D-0256; Tremco, TREMstop Acrylic Firestop Sealant.
   j. 1 Hour Construction: UL System HW-D-0034; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   k. 1 Hour Construction: UL System HW-D-0099; Specified Technologies Inc. SpeedFlex Joint Profile System.
   l. 1 Hour Construction: UL System HW-D-0363; Specified Technologies Inc. SpeedFlex Joint Profile System.
   m. 1 Hour Construction: UL System HW-D-0365; Specified Technologies Inc. SpeedFlex Joint Profile System.
   n. 1 Hour Construction: UL System HW-D-0548; Specified Technologies Inc. SpeedFlex Joint Profile System.
   o. 1 Hour Construction: UL System HW-D-0749; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   p. 1 Hour Construction: UL System HW-D-0256; Tremco, TREMstop Acrylic Firestop Sealant.
6. Head of Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
   a. 2 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   d. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
7. Head of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:
   a. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   b. 2 Hour Construction: UL System HW-D-0103; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
8. Head of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Not Cut to Fit:
   a. 2 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

c. 1 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
d. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

2.06 FIRESTOPPING, FLOOR TO WALL MOVABLE JOINTS

A. Floor To Wall Joint System That Have Movement Capabilities (Dynamic-D):
1. 3 Hour Construction: UL System FW-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
2. 3 Hour Construction: UL System FW-D-1007; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
3. 3 Hour Construction: UL System FW-D-1035; Specified Technologies Inc. AS200 Elastomeric Spray.
4. 2 Hour Construction: UL System FW-D-1069; Tremco, TREMstop Acrylic Firestop Sealant.

2.07 FIRESTOPPING, PENETRATIONS THROUGH CONCRETE, CONCRETE MASONRY CONSTRUCTION

A. Blank Openings:
1. In Floors or Walls:
a. 4 Hour Construction: UL System C-AJ-0042; RectorSeal MetaCaulk Fire Rated Mortar.
b. 4 Hour Construction: UL System C-AJ-0088; RectorSeal MetaCaulk Composite Sheet.
c. 3 Hour Construction: UL System F-A-0031; Specified Technologies Inc. CID Cast-In Devices.
d. 3 Hour Construction: UL System C-AJ-0015; Specified Technologies Inc. SSM Mortar.
e. 3 Hour Construction: UL System C-AJ-0045; RectorSeal MetaCaulk Fire Rated Putty.
f. 3 Hour Construction: UL System C-AJ-0061; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
g. 3 Hour Construction: UL System C-AJ-0113; Specified Technologies Inc. Composite Sheet.
h. 3 Hour Construction: UL System C-AJ-0135; Specified Technologies Inc. FP Intumescent Firestop Plug.
i. 2 Hour Construction: UL System C-AJ-0090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
j. 2 Hour Construction: UL System C-AJ-0015; Specified Technologies Inc. SSM Mortar.
k. 2 Hour Construction: UL System C-AJ-0116; Specified Technologies Inc. Composite Sheet.
l. 2 Hour Construction: UL System C-AJ-0136; Specified Technologies Inc. SSM Mortar.
m. 2 Hour Construction: UL System C-AJ-0171; HoldRite HydroFlame 100 Intumescent Firestop Sealant.

B. Penetrations Through Floors or Walls By:
1. Multiple Penetrations in Large Openings:
a. 2 Hour Construction: UL System C-AJ-2863; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
b. 3 Hour Construction: UL System C-AJ-8016; Specified Technologies Inc. SSM Mortar.
c. 3 Hour Construction: UL System C-AJ-8035; Specified Technologies Inc. SSM Mortar.
d. 3 Hour Construction: UL System C-AJ-8047; RectorSeal MetaCaulk 1000.

e. 3 Hour Construction: UL System C-AJ-8093; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
f. 3 Hour Construction: UL System C-AJ-8181; Specified Technologies Inc. Composite Sheet.
g. 3 Hour Construction: UL System C-AJ-8099; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 3 Hour Construction: UL System C-AJ-8110; Hilti CFS-BL Firestop Block.
i. 3 Hour Construction: UL System C-AJ-8133; RectorSeal Fire Rated Mortar.
j. 2 Hour Construction: UL System C-AJ-8143; Hilti FS-ONE MAX Intumescent Firestop Sealant.
k. 2 Hour Construction: UL System C-AJ-8035; Specified Technologies Inc. SSM Mortar.
l. 2 Hour Construction: UL System C-AJ-8042; RectorSeal MetaCaulk 1000.
m. 2 Hour Construction: UL System C-AJ-8055; Specified Technologies Inc. SSP Firestop Putty.
n. 2 Hour Construction: UL System C-AJ-8093; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
o. 2 Hour Construction: UL System C-AJ-8114; Specified Technologies Inc. SSM Mortar.
p. 2 Hour Construction: UL System C-AJ-8115; Specified Technologies Inc. SSM Mortar.
q. 2 Hour Construction: UL System C-AJ-8129; RectorSeal MetaCaulk 1200 Spray.
r. 2 Hour Construction: UL System C-AJ-8149; RectorSeal MetaCaulk 1000.
s. 2 Hour Construction: UL System C-AJ-8171; RectorSeal MetaCaulk Wrap Strip.
t. 2 Hour Construction: UL System C-AJ-8181; Specified Technologies Inc. Composite Sheet.
u. 2 Hour Construction: UL System C-AJ-8220; Specified Technologies Inc. SSM Mortar.

2. Bathtub Drains:
   a. Up to 3 Hour Construction: UL System F-A-1037, F-A-1038, F-A-2094, or F-A-2095; Hilti CP 681 Tub Box Kit.
   b. Up to 3 Hour Construction: UL System F-A-2183; HoldRite HydroFlame HFPTB-NP 0200, HFPTB-TW-0200, TB-NP-0200, or TB-TW-0200.
3. Uninsulated Metallic Pipe, Conduit, and Tubing:
   a. 3 Hour Construction: UL System C-AJ-1076; RectorSeal MetaCaulk 950.
   b. 3 Hour Construction: UL System C-AJ-1079; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   c. 3 Hour Construction: UL System C-AJ-1089; Specified Technologies Inc. SSM Mortar.
   d. 3 Hour Construction: UL System C-AJ-1184; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   e. 3 Hour Construction: UL System C-AJ-1198; Specified Technologies Inc. SIL Silicone Sealant.
   f. 3 Hour Construction: UL System C-AJ-1215; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   g. 3 Hour Construction: UL System C-AJ-1217; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   h. 3 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   i. 3 Hour Construction: UL System C-AJ-1261; RectorSeal MetaCaulk 1000.
   j. 3 Hour Construction: UL System C-AJ-1320; RectorSeal MetaCaulk 1000.
   k. 3 Hour Construction: UL System C-AJ-1353; Specified Technologies Inc. LCI Intumescent Firestop Sealant.

l. 3 Hour Construction: UL System C-AJ-1421; Hilti FS-ONE MAX Intumescent Firestop Sealant or CP 604 Self-Leveling Firestop Sealant.
m. 3 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
n. 3 Hour Construction: UL System C-AJ-1718; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
o. 2 and 3 Hour Construction: UL System C-AJ-1696; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
p. 2 Hour Construction: UL System C-AJ-1036; RectorSeal MetaCaulk 950.
q. 2 Hour Construction: UL System C-AJ-1090; Specified Technologies Inc. SSP Firestop Putty.
r. 2 Hour Construction: UL System C-AJ-1186; RectorSeal MetaCaulk 950.
s. 2 Hour Construction: UL System C-AJ-1198; Specified Technologies Inc. SIL Silicone Sealant.
t. 2 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
u. 2 Hour Construction: UL System C-AJ-1240; Specified Technologies Inc. LC Endothermic Firestop Sealant.
v. 2 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
w. 1 Hour Construction: UL System C-AJ-1039; RectorSeal MetaCaulk 950.

4. Uninsulated Non Metallic Pipe, Conduit, and Tubing:
a. 3 Hour Construction: UL System C-AJ-2842; HoldRite HydroFlame Pipe Collar.
b. 3 Hour Construction: UL System C-AJ-2848; HoldRite HydroFlame Wrap Strip and HydroFlame 200 Intumescent Firestop Sealant.
c. 3 Hour Construction: UL System C-AJ-2851; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
d. 3 Hour Construction: UL System C-AJ-2106; Specified Technologies Inc. SSW Wrap Strips.
e. 3 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
f. 3 Hour Construction: UL System C-AJ-2151; RectorSeal MetaCaulk 1200.
g. 3 Hour Construction: UL System C-AJ-2220; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 3 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSC Collars.
i. 3 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSW Wrap Strips.
j. 3 Hour Construction: UL System C-AJ-2342; Hilti CP-E/S Firestop Wrap Strip.
k. 3 Hour Construction: UL System C-AJ-2661; RectorSeal MetaCaulk 1000.
l. 2 and 3 Hour Construction: UL System C-AJ-2843; HoldRite HydroFlame Pipe Collar.
m. 2 Hour Construction: UL System C-AJ-2047; RectorSeal MetaCaulk 1000.
n. 2 Hour Construction: UL System C-AJ-2167; Hilti FS-ONE MAX Intumescent Firestop Sealant.
o. 2 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
p. 2 Hour Construction: UL System C-AJ-2106; Specified Technologies Inc. SSW Wrap Strips.
q. 2 Hour Construction: UL System C-AJ-2282; Specified Technologies Inc. SSW Wrap Strips.
r. 2 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSC Collars.
s. 2 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSW Wrap Strips.

t. 2 Hour Construction: UL System C-AJ-2298; Specified Technologies Inc. LCC Intumescent Firestop Collars.
u. 2 Hour Construction: UL System C-AJ-2348; RectorSeal MetaCaulk 150+.
v. 2 Hour Construction: UL System C-AJ-2588; Specified Technologies Inc. RTC Range-Taking Collar.
w. 2 Hour Construction: UL System C-AJ-2707; RectorSeal MetaCaulk 1000.
x. 2 Hour Construction: UL System C-AJ-2772; Specified Technologies Inc. SSW Wrap Strips.
y. 2 Hour Construction: UL System C-BJ-2021; Hilti CP 643N Firestop Collar.

5. Electrical Cables Not In Conduit:
   a. 3 Hour Construction: UL System C-AJ-3085; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   b. 3 Hour Construction: UL System C-AJ-3095; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 3 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   d. 3 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSP Firestop Putty.
   e. 3 Hour Construction: UL System C-AJ-3208; Hilti CP 618 Firestop Putty Stick.
   f. 3 Hour Construction: UL System C-AJ-3231; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   g. 3 Hour Construction: UL System C-AJ-3312; Specified Technologies Inc. FP Intumescent Firestop Plug.
   h. 3 Hour Construction: UL System C-AJ-3360; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   i. 2 Hour Construction: UL System C-AJ-3213; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   j. 2 Hour Construction: UL System C-AJ-3213; Specified Technologies Inc. SSC Collars.
   k. 2 Hour Construction: UL System W-J-3046; Specified Technologies Inc. SSP Firestop Putty.
   l. 2 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSP Firestop Putty.
   m. 2 Hour Construction: UL System C-AJ-3216; Hilti CFS-PL Firestop Plug.
   n. 2 Hour Construction: UL System C-AJ-3283; Hilti CP653 Speed Sleeve.
   o. 2 Hour Construction: UL System C-AJ-3283; Hilti CFS-SL SK Firestop Sleeve Kit.
   p. 2 Hour Construction: UL System C-AJ-3283; Hilti CFS-SL SK Firestop Sleeve Kit with Hilti CFS-SL GP Gangplate.
   q. 2 Hour Construction: UL System W-J-3198; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
   r. 2 Hour Construction: UL System W-J-3199; Hilti CFS-SL SK Firestop Sleeve Kit.
   s. 2 Hour Construction: UL System F-A-3085, F-A-3087, F-A-3088, W-J-3277, W-J-3278, W-J-3279, W-L-3481, W-L-3482, W-L-3483, and W-L-3484.; Hilti CFS-MSL L Modular Sleeve.
6. Cable Trays with Electrical Cables:
   a. 3 Hour Construction: UL System C-AJ-4029; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   b. 3 Hour Construction: UL System C-AJ-4093; Hilti CFS-BL Firestop Block.
   c. 2 Hour Construction: UL System C-AJ-4094; Hilti CFS-BL Firestop Block.
7. Electrical Busways:
   a. 3 Hour Construction: UL System C-AJ-6017; Hilti FS-ONE MAX Intumescent Firestop Sealant.
8. Insulated Pipes:

a. 3 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
b. 3 Hour Construction: UL System C-AJ-5410; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
c. 2 Hour Construction: UL System C-AJ-5048; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant, CP 604 Self-Leveling Firestop Sealant or CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
d. 2 Hour Construction: UL System C-AJ-5087; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
e. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE IMAX Intumescent Firestop Sealant.
f. 2 Hour Construction: UL System C-AJ-5138; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
g. 2 Hour Construction: UL System C-AJ-5313; Specified Technologies Inc. LC Endothermic Firestop Sealant.

9. HVAC Ducts, Uninsulated:
a. 3 Hour Construction: UL System C-AJ-7051; Hilti FS-ONE MAX Intumescent Firestop Sealant.
b. 3 Hour Construction: UL System C-AJ-7204; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
c. 2 Hour Construction: UL System C-AJ-7111; Hilti FS-ONE MAX Intumescent Firestop Sealant.

C. Penetrations Through Floors By:
1. Multiple Penetrations in Large Openings:
a. 4 Hour Construction: UL System F-A-0019; RectorSeal Cast in Place Firestop Device.
b. 3 Hour Construction: UL System F-A-1224; Hilti CFS-CID U Firestop Cast-In Device.
c. 3 Hour Construction: UL System F-A-3052; HoldRite HydroFlame HFP-Px, HFP-PxB, HFP-Mx, or HFP-MxB Cast-In Device.
d. 3 Hour Construction: UL System F-A-8034; HoldRite HydroFlame HFP-P3, or HFP-P3B Cast-In Device.
e. 2 Hour Construction: UL System F-A-0021; RectorSeal Cast-in-Place Firestop Device.
f. 2 Hour Construction: UL System F-A-8012; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.

2. Uninsulated Metallic Pipe, Conduit, and Tubing:
a. 2 and 3 Hour Construction: UL System F-A-1222; Hilti CFS-CID U Firestop Cast-In Device.
b. 3 Hour Construction: UL System F-A-1110; Specified Technologies Inc. CID Cast-In Device.
c. 3 Hour Construction: UL System F-B-1038; HoldRite HydroFlame HFP-M/P8, HFP-M/P10, or HFP-M/P12 Cast-In Device.
d. 2 Hour Construction: UL System F-A-1110; Specified Technologies Inc. CID Cast-In Device.
e. 2 Hour Construction: UL System F-A-1129; Specified Technologies Inc. Closet Flange Firestop Gasket.

3. Uninsulated Non Metallic Pipe, Conduit, and Tubing:
a. 2 and 3 Hour Construction: UL System F-A-2411; Hilti CFS-CID U Firestop Cast-In Device.
b. 2 and 3 Hour Construction: UL System F-A-2412; Hilti CFS-CID U Firestop Cast-In Device.
c. 3 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop In Device.

d. 3 Hour Construction: UL System F-A-2192; Specified Technologies Inc. CID Cast In Device.
e. 3 Hour Construction: UL System F-A-2246; Specified Technologies Inc. CID Cast In Device.
f. 3 Hour Construction: UL System F-B-1038; HoldRite HydroFlame HFP-P8, HFP P10, or HFP-P12 Cast-In Device.
g. 2 and 3 Hour Construction: UL System F-A-1133; HoldRite HydroFlame HFP-Px, HFP-PxB Cast In Device.
h. 2 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop In Device.
i. 2 Hour Construction: UL System F-A-2216; Specified Technologies Inc. Closet Flange Firestop Gasket.
j. 2 Hour Construction: UL System F-A-2246; Specified Technologies Inc. CID Cast In Device.

4. Electrical Cables Not In Conduit:
   a. 3 Hour Construction: UL System F-A-3021; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   b. 3 Hour Construction: UL System F-A-3029; Specified Technologies Inc. Ready Sleeve.
   c. 3 Hour Construction: UL System F-A-3037; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   d. 3 Hour Construction: UL System F-A-3054; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   e. 2 and 3 Hour Construction: UL System F-A-3091; Hilti CFS-CID U Firestop Cast-In Device.
   f. 3 Hour Construction: UL System F-A-3052; HoldRite HydroFlame HFP-Px, HFP PxB, HFP-Mx, or HFP-MxB Cast-In Device.
   g. 2 Hour Construction: UL System F-A-3032; Specified Technologies Inc. Ready Split Sleeve.
   h. 2 Hour Construction: UL System F-A-3058; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
5. Electrical Busways:
   a. 3 Hour Construction: UL System C-AJ-6017; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.
   b. 2 Hour Construction: UL System F-A-6002; Hilti CP 604 Self-Leveling Firestop Sealant.
6. Insulated Pipes:
   a. 2 and 3 Hour Construction: UL System F-A-5083; Hilti CFS-CID U Firestop Cast In Device.
   b. 2 and 3 Hour Construction: UL System F-A-5084; Hilti CFS-CID U Firestop Cast In Device.
   c. 3 Hour Construction: UL System F-A-5041; Specified Technologies Inc. CID Cast In Device.
   d. 3 Hour Construction: UL System F-A-5045; Specified Technologies Inc. CID Cast In Device.
   e. 3 Hour Construction: UL System F-A-5013; HoldRite HydroFlame HFP-M/P8, HFP M/P10, or HFP-M/P12 Cast-In Device.
   f. 2 and 3 Hour Construction: UL System F-A-5043; HoldRite HydroFlame HFP-Px, or HFP-PxB Cast-In Device.
   g. 2 Hour Construction: UL System F-A-5041; Specified Technologies Inc. CID Cast-In Device.
   h. 2 Hour Construction: UL System F-A-5045; Specified Technologies Inc. CID Cast-In Device.

D. Penetrations Through Walls By:
   1. Uninsulated Metallic Pipe, Conduit, and Tubing:

a. 3 Hour Construction: UL System C-AJ-1700; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
b. 2 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.
c. 1 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2. Electrical Cables Not In Conduit:
   a. 4 Hour Construction: UL System W-J-3142; Specified Technologies Inc. Ready-Sleeve.
   b. 4 Hour Construction: UL System W-J-3157; Specified Technologies Inc. Ready Split Sleeve.
   c. 4 Hour Construction: UL System W-J-3195; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   d. 2 Hour Construction: UL System C-AJ-3357; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   e. 2 Hour Construction: UL System C-AJ-3095; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   f. 2 Hour Construction: UL System C-AJ-3216; Hilti CFS-PL Firestop Plug.
   g. 2 Hour Construction: UL System W-J-3090; Specified Technologies Inc. SSP Firestop Putty.
   h. 2 Hour Construction: UL System W-J-3098; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   i. 2 Hour Construction: UL System W-J-3130; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
   j. 2 Hour Construction: UL System W-J-3138; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   k. 2 Hour Construction: UL System W-J-3141; Specified Technologies Inc. Ready-Sleeve.
   l. 2 Hour Construction: UL System W-J-3156; Specified Technologies Inc. Ready Split Sleeve.
   m. 2 Hour Construction: UL System W-J-3158; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
   n. 2 Hour Construction: UL System W-J-3180; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
   o. 2 Hour Construction: UL System W-J-3182; Specified Technologies Inc. Ready Split Sleeve.
   p. 2 Hour Construction: UL System W-J-3182; Specified Technologies Inc. Ready Sleeve.

3. Insulated Pipes:
   a. 2 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System C-AJ-5407; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   d. 1 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   e. 1 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.

4. HVAC Ducts, Uninsulated:
   a. 3 Hour Construction: UL System C-AJ-7204; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-J-7092; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.

c. 2 Hour Construction: UL System W-J-7109; Hilti FS-ONE MAX Intumescent Firestop Sealant, or CP 606 Flexible Firestop Sealant.

5. HVAC Ducts, Insulated:
   a. 2 Hour Construction: UL System W-J-7112; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.08 FIRESTOPPING, PENETRATIONS THROUGH FRAMED FLOORS

A. Metallic Pipe, Conduit, and Tubing Penetrations in Framed Floors:
   1. 1 and 2 Hour Construction: UL System F-C-1177; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   2. 1 Hour Construction: UL System F-C-1053; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   3. 1 Hour Construction: UL System F-C-1162; Specified Technologies Inc. Closet Flange Firestop Gasket.

B. Non Metallic Pipe, Conduit or Tubing in Framed Floors:
   1. 2 Hour Construction: UL System F-C-2020; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   2. 2 Hour Construction: UL System F-C-2020; Specified Technologies Inc. SSC collars.
   3. 2 Hour Construction: UL System F-C-2348; Specified Technologies Inc. RTC Range Taking Collar.
   4. 2 Hour Construction: UL System F-C-2402; Specified Technologies Inc. Closet Flange Firestop Gasket.
   5. 1 and 2 Hour Construction: UL System F-C-2473; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   6. 1 Hour Construction: UL System F-C-2487; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   7. 1 Hour Construction: UL System F-C-2014; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   8. 1 Hour Construction: UL System F-C-2020; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   9. 1 Hour Construction: UL System F-C-2020; Specified Technologies Inc. SSC Collars.
   10. 1 Hour Construction: UL System F-C-2077; RectorSeal MetaCaulk 1000.
   11. 1 Hour Construction: UL System F-C-2089; RectorSeal MetaCaulk 1000.
   12. 1 Hour Construction: UL System F-C-2130; RectorSeal MetaCaulk 1000.
   13. 1 Hour Construction: UL System F-C-2326; RectorSeal MetaCaulk 350i.
   14. 1 Hour Construction: UL System F-C-2348; Specified Technologies Inc. RTC Range Taking Collar.
   15. 1 Hour Construction: UL System F-C-2402; Specified Technologies Inc. Closet Flange Firestop Gasket.

C. Electrical Cable in Framed Floors:
   1. 1 Hour Construction: UL System F-C-3010; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   2. 1 and 2 Hour Construction: UL System F-C-3121; HoldRite HydroFlame 200 Intumescent Firestop Sealant.

D. Insulated Pipe in Framed Floors:
   1. 2 Hour Construction: UL System F-C-5090; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   2. 1 Hour Construction: UL System F-C-5043; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).

2.09 FIRESTOPPING, PENETRATIONS THROUGH GYPSUM BOARD WALLS

A. Blank Openings:
   1. 4 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.

2. 3 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
3. 2 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
4. 2 Hour Construction: UL System W-L-0032; Specified Technologies Inc. FP Intumescent Firestop Plug.
5. 2 Hour Construction: UL System W-L-0038; Specified Technologies Inc. FP Intumescent Firestop Plug.
6. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
7. 1 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
8. 1 Hour Construction: UL System W-L-0032; Specified Technologies Inc. FP Intumescent Firestop Plug.
9. 1 Hour Construction: UL System W-L-0038; Specified Technologies Inc. FP Intumescent Firestop Plug.
10. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.

B. Penetrations By:
   1. Multiple Penetrations in Large Openings:
      a. 2 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.
      c. 2 Hour Construction: UL System W-L-8025; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
      d. 2 Hour Construction: UL System W-L-8050; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
      e. 2 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      f. 2 Hour Construction: UL System W-L-8073; Specified Technologies Inc. Composite Sheet.
      g. 2 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      h. 1 and 2 Hour Construction: UL System W-L-1568; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
      i. 1 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      j. 1 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.
      k. 1 Hour Construction: UL System W-L-8025; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
      l. 1 Hour Construction: UL System W-L-8050; Specified Technologies Inc. SSB Intumescent Firestop pillows.
      m. 1 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      n. 1 Hour Construction: UL System W-L-8073; Specified Technologies Inc. Composite Sheet.
      o. 1 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   2. Uninsulated Metallic Pipe, Conduit, and Tubing:
      a. 3 and 4 Hour Construction: UL System W-L-1560; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-1033; Specified Technologies Inc. SIL Silicone Sealant.
      c. 2 Hour Construction: UL System W-L-1042; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).

d. 2 Hour Construction: UL System W-L-1049; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
e. 2 Hour Construction: UL System W-L-1090; Specified Technologies Inc. LC Endothermic Firestop Sealant.
f. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
g. 2 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 2 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
i. 2 Hour Construction: UL System W-L-1477; Specified Technologies Inc. EZ Firestop Grommet.
j. 2 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.
k. 1 and 2 Hour Construction: UL System W-L-1558; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
l. 1 and 2 Hour Construction: UL System W-L-1558; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
m. 1 Hour Construction: UL System W-L-1042; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
n. 1 Hour Construction: UL System W-L-1049; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
o. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
p. 1 Hour Construction: UL System W-L-1090; Specified Technologies Inc. LC Endothermic Firestop Sealant.
q. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
r. 1 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
s. 1 Hour Construction: UL System W-L-1477; Specified Technologies Inc. EZ Firestop Grommet.
t. 1 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.

3. Uninsulated Non Metallic Pipe, Conduit, and Tubing:
a. 4 Hour Construction: UL System W-L-2704; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
b. 2 Hour Construction: UL System W-L-2048; Specified Technologies Inc. SSW Wrap Strips.
c. 2 Hour Construction: UL System W-L-2074; Specified Technologies Inc. SSC Collars.
d. 2 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
e. 2 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
f. 2 Hour Construction: UL System W-L-2237; Specified Technologies Inc. LCC Intumescent Firestop Collars.
g. 2 Hour Construction: UL System W-L-2241; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
h. 2 Hour Construction: UL System W-L-2243; Specified Technologies Inc. SSW Wrap Strips.
i. 2 Hour Construction: UL System W-L-2493; Specified Technologies Inc. RTC Range-Taking Collar.
j. 1 and 2 Hour Construction: UL System W-L-2710; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
k. 1 Hour Construction: UL System W-L-2048; Specified Technologies Inc. SSW Wrap Strips.

l. 1 Hour Construction: UL System W-L-2074; Specified Technologies Inc. SSC Collars.
m. 1 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
n. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
o. 1 Hour Construction: UL System W-L-2237; Specified Technologies Inc. LCC Intumescent Firestop Collars.
p. 1 Hour Construction: UL System W-L-2241; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
q. 1 Hour Construction: UL System W-L-2243; Specified Technologies Inc. SSW Wrap Strips.
r. 1 Hour Construction: UL System W-L-2493; Specified Technologies Inc. RTC Range Taking Collar.

4. Electrical Cables Not In Conduit:
a. 4 Hour Construction: UL System W-L-3276; Specified Technologies Inc. Ready-Sleeve.
b. 4 Hour Construction: UL System W-L-3304; Specified Technologies Inc. Ready Split Sleeve.
c. 4 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
d. 3 Hour Construction: UL System W-L-3276; Specified Technologies Inc. Ready Sleeve.
e. 3 Hour Construction: UL System W-L-3304; Specified Technologies Inc. Ready Split Sleeve.
f. 3 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
g. 2 Hour Construction: UL System W-L-3024; Specified Technologies Inc. SSP Firestop Putty.
h. 2 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
i. 2 Hour Construction: UL System W-L-3076; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
j. 2 Hour Construction: UL System W-L-3084; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
k. 2 Hour Construction: UL System W-L-3135; Specified Technologies Inc. SSP Firestop Putty.
l. 2 Hour Construction: UL System W-L-3169; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
m. 2 Hour Construction: UL System W-L-3218; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
n. 2 Hour Construction: UL System W-L-3255; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
o. 2 Hour Construction: UL System W-L-3256; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
p. 2 Hour Construction: UL System W-L-3265; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
q. 2 Hour Construction: UL System W-L-3303; Specified Technologies Inc. Ready Split Sleeve.
r. 2 Hour Construction: UL System W-L-3306; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
s. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
t. 2 Hour Construction: UL System W-L-3350; Specified Technologies Inc. LC Endothermic Firestop Sealant.

u. 2 Hour Construction: UL System W-L-3357; Specified Technologies Inc. FP Intumescent Firestop Plug.
v. 2 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Split Sleeve.
w. 2 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Sleeve.
x. 2 Hour Construction: UL System W-L-3369; Specified Technologies Inc. EZ Firestop Grommet.
y. 2 Hour Construction: UL System W-L-3370; Specified Technologies Inc. EZ Firestop Grommet.
z. 2 Hour Construction: UL System W-L-3374; Specified Technologies Inc. FP Intumescent Firestop Plug.
aa. 2 Hour Construction: UL System W-L-3376; Specified Technologies Inc. Ready Sleeve.
bb. 2 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
cc. 2 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
dd. 2 Hour Construction: UL System W-L-3378; Specified Technologies Inc. EZ Firestop Grommet.
ee. 2 Hour Construction: UL System W-L-3379; Specified Technologies Inc. EZ Firestop Grommet.
ff. 2 Hour Construction: UL System W-L-3390; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
gg. 2 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
hh. 2 Hour Construction: UL System W-L-3395; Hilti CP653 Speed Sleeve.
ii. 2 Hour Construction: UL System W-L-3395; Hilti CFS-SL SK Firestop Sleeve Kit.
jj. 2 Hour Construction: UL System W-L-3395; Hilti CFS-SL SK Firestop Sleeve Kit with Hilti CFS-SL GP Gangplate.
kk. 2 Hour Construction: UL System W-L-3414; Hilti CFS-D Firestop Cable Disc.
ll. 1 and 2 Hour Construction: UL System W-L-3453; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
mm. 1 Hour Construction: UL System W-L-3024; Specified Technologies Inc. SSP Firestop Putty.
nn. 1 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
oo. 1 Hour Construction: UL System W-L-3076; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
pp. 1 Hour Construction: UL System W-L-3084; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
qq. 1 Hour Construction: UL System W-L-3135; Specified Technologies Inc. SSP Firestop Putty.
rr. 1 Hour Construction: UL System W-L-3169; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
ss. 1 Hour Construction: UL System W-L-3218; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
tt. 1 Hour Construction: UL System W-L-3255; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
uu. 1 Hour Construction: UL System W-L-3256; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
vv. 1 Hour Construction: UL System W-L-3265; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.

ww. 1 Hour Construction: UL System W-L-3303; Specified Technologies Inc. Ready Split Sleeve.
xx. 1 Hour Construction: UL System W-L-3306; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
yy. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
zz. 1 Hour Construction: UL System W-L-3350; Specified Technologies Inc. LC Endothermic Firestop Sealant.
aaa. 1 Hour Construction: UL System W-L-3357; Specified Technologies Inc. FP Intumescent Firestop Plug.
bbb. 1 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Split Sleeve.
ccc. 1 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Sleeve.
ddd. 1 Hour Construction: UL System W-L-3369; Specified Technologies Inc. EZ Firestop Grommet.
eee. 1 Hour Construction: UL System W-L-3370; Specified Technologies Inc. EZ Firestop Grommet.
fff. 1 Hour Construction: UL System W-L-3374; Specified Technologies Inc. FP Intumescent Firestop Plug.
ggg. 1 Hour Construction: UL System W-L-3376; Specified Technologies Inc. Ready-Sleeve.
hhh. 1 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
iii. 1 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
jjj. 1 Hour Construction: UL System W-L-3378; Specified Technologies Inc. EZ Firestop Grommet.
kkk. 1 Hour Construction: UL System W-L-3379; Specified Technologies Inc. EZ Firestop Grommet.
lll. 1 Hour Construction: UL System W-L-3390; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
mmm. 1 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
nnn. 1 Hour Construction: UL System W-L-3414; Hilti CFS-D Firestop Cable Disc.

5. Cable Trays with Electrical Cables:
   a. 2 Hour Construction: UL System W-L-4008; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   b. 2 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
   c. 2 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   d. 1 Hour Construction: UL System W-L-4008; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   e. 1 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
   f. 1 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.
6. Insulated Pipes:
   a. 2 Hour Construction: UL System W-L-5014; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
   d. 2 Hour Construction: UL System W-L-5121; Specified Technologies Inc. LCI Intumescent Firestop Sealant.

e. 2 Hour Construction: UL System W-L-5273; Specified Technologies Inc. LC Endothermic Firestop Sealant.
f. 2 Hour Construction: UL System W-L-5298; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
g. 1 Hour Construction: UL System W-L-5014; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
h. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
i. 1 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
j. 1 Hour Construction: UL System W-L-5121; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
k. 1 Hour Construction: UL System W-L-5273; Specified Technologies Inc. LC Endothermic Firestop Sealant.
l. 1 Hour Construction: UL System W-L-5298; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
m. 1 and 2 Hour Construction: UL System W-L-5357; HoldRite HydroFlame 200 Intumescent Firestop Sealant.

7. HVAC Ducts, Insulated:
   a. 2 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-7164; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   c. 2 Hour Construction: UL System W-L-7238; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   d. 1 Hour Construction: UL System W-L-7164; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   e. 1 Hour Construction: UL System W-L-7238; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   f. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
8. Shower Valve Penetration, Uninsulated:
   a. 1 and 2 Hour Construction: UL System W-L-7325; Fire Shield, LLC; Barri-Ring.
   b. 1 and 2 Hour Construction: UL System W-L-7249; Fire Shield, LLC; Barri-Box.
9. Wall Penetration Box, Uninsulated:
   a. 1 and 2 Hour Construction: UL System W-L-7248; Fire Shield, LLC; Barricade.

2.10 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.
   2. Fire Ratings: See drawings for required systems and ratings.

B. Firestopping at Uninsulated Metallic Pipe and Conduit Penetrations, of diameter 4 inches or less: Caulk or putty.
   1. Stairway Walls: UL Design No. as delineated within Contract Documents.

C. Firestopping at Cable Tray Penetrations: Any material meeting requirements.

D. Firestopping at Cable Penetrations, not in Conduit or Cable Tray: Caulk or putty.

E. Firestopping at Control Joints (without Penetrations): Any material meeting requirements.

F. Firestopping Between Edge of Floor Slab and Curtain Wall without Penetrations: Fiber firestopping with smoke seal coating; UL (FRD) Design No. as indicated on drawings, T Rating 3/4 hour.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all openings are ready to receive Work, this Section, prior to commencng same.

3.02 PREPARATION

A. Thoroughly clean all substrate surfaces of any elements that might adversely affect bond of firestopping material.

B. Remove all incompatible materials that may adversely affect bond.

C. Install all necessary backing materials, as required to prevent any liquid material leakage.

3.03 INSTALLATION

A. Install all materials only in manner described within Fire Test Report and full accordance with Manufacturer's instructions.

B. **Do not** cover any installed firestopping, until inspected by Independent Testing Agency.

C. **Do not** cover any installed firestopping, until inspected by those Local Authorities having Jurisdiction.

D. Install all labeling, as required by code.

3.04 FIELD QUALITY CONTROL

A. Independent Testing Agency: An independent Inspection Agency will examine all penetration firestopping in accordance with ASTM E2174 and ASTM E2393.

B. Replace all penetration firestopping, joints at those locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

A. Thoroughly clean all Work, this Section.

3.06 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Spray applied joint sealants.

B. Nonsag gunnable joint sealants.

C. Self leveling pourable joint sealants.

D. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 21 16 - Gypsum Board Assemblies.

B. Section 09 30 00 - Tiling.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

C. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

D. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.

E. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2024.

F. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

G. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.

H. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

I. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

J. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

K. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.

L. ASTM C1382 - Standard Test Method for Determining Tensile Adhesion Properties of Sealants when Used in Exterior Insulation and Finishing Systems (EIFS) Joints; 2016 (Reapproved 2023).

M. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2025).

N. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

O. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

P. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2022.

Q. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2023.

R. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2022.

S. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

T. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.

U. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

V. SWRI (VAL) - SWR Institute Validated Products Directory; Current Edition.

W. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Backing material recommended by sealant Manufacturer.
   4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   5. Substrates the product should not be used on.
   6. Substrates for which use of primer is required.
   7. Substrates for which laboratory adhesion and/or compatibility testing is required.
   8. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   9. Provide detailed Sample Warranty documentation, particular to this Project.
   10. Certification by manufacturer indicating that product complies with specification requirements.
   11. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.

C. Product Data for Accessory Products: Submit Manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

F. Sustainable Design Documentation: For sealants and primers, submit deailed VOC content and emissions documentation.

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

H. Installation Plan: Submit at least four weeks prior to start of installation.

I. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

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

K. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

L. Installation Log: Submit filled out log for each length or instance of sealant installed.

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

N. Manufacturer's qualification statement.

O. Installer's qualification statement.

P. Executed warranty.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

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

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

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

F. Installation Plan: Include schedule of sealed joints, including the following:
   1. Joint width as identified within Contract Documents.
   2. Joint depth as delineated wtihin Contract Documents.
   3. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgment that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
   4. Approximate date of installation, for evaluation of thermal movement influence.
   5. Installation Log Form: Include the following data fields, with known information filled out.
      a. Unique identification of each length or instance of sealant installed.
      b. Location on project.
      c. Substrates.
      d. Sealant used.
      e. Stated movement capability of sealant.
      f. Primer to be used, or indicate no primer is used.
      g. Size and actual backing material used.
      h. Date of installation.
      i. Name of installer.
      j. Actual joint width; provide space to indicate maximum and minimum width.
      k. Actual joint depth to face of backing material at centerline of joint.
      l. Air temperature.

G. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
   1. Identification of testing agency.
   2. Name(s) of sealant Manufacturer's field representatives who will be observing.
   3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
      a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
      b. Test date.

c. Location on project.
d. Sealant used.
e. Stated movement capability of sealant.
f. Test method used.
g. Date of test.
h. Copy of test method documents.
i. Age of sealant upon date of testing.
j. Test results, modeled after the sample form in the test method document.
k. Indicate use of photographic record of test.

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

I. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.
3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.
4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
5. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
6. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
7. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

J. Nondestructive Field Adhesion Test: Test for adhesion in full accordance with ASTM C1521, using Nondestructive Spot Method.
1. Record results on Field Quality Control Log.
2. Repair failed portions of joints.

K. Destructive Field Adhesion Test: Test for adhesion in full accordance with ASTM C1521, using Destructive Tail Procedure.
1. Sample: Provide (2) Two Product Samples, minimum (18) Eighteen inches long, as required to accurately illustrate construction, color and sheen.
2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the 1-inch mark is that distance from the substrate, the test has failed.
3. If either adhesive or cohesive failure occurs before minimum elongation, take necessary measures to correct conditions and retest; record each modification to products or installation procedures.
4. Record all results upon Field Quality Control Log.
5. Replace all failed portions of joints.

L. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or another applicable method as recommended by manufacturer.

1.06 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Manufacturer Warranty: Provide (20) Twenty Year Manufacturer's Warranty for all installed sealants, accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete all forms within Owner's name and register with said Manufacturer.

C. Replace all defective Work immediately.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Spray Applied Sealants:
   1. CertainTeed Corporation:www.certainteed.com.
   2. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

B. Nonsag Sealants:
   1. Adfast USA In.: www.adfastcorp.com.
   2. Dow: www.dow.com.
   3. W. R. Meadows, Inc.:www.wrmeadows.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Self Leveling Sealants:
   1. Bostik Inc.: www.bostik-us.com.
   2. QUIKRETE Companies: www.quikrete.com.
   3. Sherwin-Williams Company: www.sherwin-williams.com.
   4. Sika Corporation: www.usa.sika.com.
   5. W. R. Meadows, Inc.: www.wrmeadows.com.
   6. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints:
      a. Seal open joints except open joints indicated on drawings as not sealed.
      b. Seal the following joints:
         1) Wall expansion and control joints.
         2) Joints between doors, windows, and other frames or adjacent construction.
         3) Joints between different exposed materials.
   2. Interior Joints:
      a. Seal open joints except specific open joints indicated on drawings as not sealed.
      b. Seal the following joints:
         1) Joints between door frames and window frames and adjacent construction.
   3. Do Not Seal:
      a. Joints indicated to be covered with expansion joint cover assemblies.
      b. Joints where sealant is specified to be furnished and installed by Manufacturer of product to be sealed.
      c. Joints where sealant installation is specified in other sections.
      d. Joints between suspended ceilings and walls.

2.03 JOINT SEALANTS, GENERAL

A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 61 16.

B. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

C. Colors: As selected by Architect from Manufacturer's full range of options.

2.04 SPRAY APPLIED, JOINT SEALANTS

A. Spray Applied Water Based Acrylic Latex Sealant: For interior applications, spray applied, fast drying, premixed acrylic latex sealant, intended for air sealing penetrations and joints.

1. Surface Burning Characteristics: Smoke developed index of 450 or less, and flame spread index of 25 or less, Class A, when tested in full accordance with ASTM E84.
2. Spray Equipment: Use rate of application and methods as recommended by Manufacturer.
3. Wood Adhesion: Passes ASTM D4541, without pulling back, shrinking, or cracking.
4. Color: As selected by Architect from Manufacturer's full range of options.
5. Products:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.05 NONSAG, JOINT SEALANTS

2.06 ACCESSORIES

A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

B. Sealant Backing Rod, Closed Cell Type:
    1. Cylindrical flexible sealant backings complying with ASTM C1330 Type C.
    2. Size: 25 to 50 percent larger in diameter than joint width.
    3. Products:
        a. Nomaco, Inc; HBR: www.nomaco.com.
        b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Sealant Backing Rod, Open Cell Type:
    1. Cylindrical flexible sealant backings complying with ASTM C1330 Type O.
    2. Size: 25 to 50 percent larger in diameter than joint width.
    3. Products:
        a. Nomaco, Inc; OCFoam: www.nomaco.com.
        b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Sealant Backing Rod, Bi Cellular Type:
    1. Cylindrical flexible sealant backings complying with ASTM C1330 Type B.
    2. Size: 25 to 50 percent larger in diameter than joint width.
    3. Products:
        a. Adfast USA Inc; Adseal BR-2600 Backer Rod: www.adfastcorp.com.
        b. Nomaco, Inc; SOF Rod: www.nomaco.com.
        c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Overlay Extrusion for Glazing System Joint Protection: Rubber profiled extrusions placed over joints in glazing system and provided with watertight seal.
    1. Profile: As indicated witihin Contract Documents.
    2. Color: As selected by Architect from Manufacturer's full range of options.
    3. Durometer Hardness, Type A: 65, minimum, when tested in accordance with ASTM D2240.
    4. Tensile Strength: 1,139 psi, in accordance with ASTM D412.
    5. Products:
        a. Tremco Commercial Sealants & Waterproofing; Spectrem Restoratoin Overlay: www.tremcosealants.com.
        b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Preformed Extruded Silicone Joint Seal: Pre-cured low-modulus silicone extrusion, in sizes to fit applications indicated on drawings, combined with a neutral-curing liquid silicone sealant for bonding joint seal to substrates.
   1. Size: 1 inch wide, in rolls 100 feet long.
   2. Thickness: 0.78 inch, with ridges along outside bottom edges for bonding area.
   3. Color: As selected by Architect from Manufacturer's full range of options.
   4. Durometer Hardness, Type A: 26 to 32, minimum, when tested in accordance with ASTM D2240.
   5. Tensile Strength: 218 psi, in accordance with ASTM D412.
   6. Elongation at Break: 554 percent, in accordance with ASTM D412.
   7. Products:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Preformed Extruded Polyurethane Joint Seal: Medium-modulus, preformed polyurethane extrusion used to bridge joints under elastomeric wall coatings, in sizes to fit applications indicated on drawings, combined with polyurethane sealant for bonding joint seal to substrates.
   1. Size: 1-1/2 inch wide, in rolls 100 feet long.
   2. Thickness: 0.051 inch, with ridges along outside bottom edges for bonding area.
   3. Color: As selected by Architect from Manufacturer's full range of options.
   4. Durometer Hardness, Type A: 55, minimum, when tested in accordance with ASTM D2240.
   5. Tensile Strength: 532 psi, in full accordance with ASTM D412.
   6. Elongation at Break: 690 percent, in full accordance with ASTM D412.
   7. Products:
      a. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

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

I. Masking Tape: Self adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

J. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

K. Primers: That type, as recommended by sealant Manufacturer, as required to suit application, this particular Project and nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all joints are ready to receive Work, Section, prior to beginning same.

B. Verify all backing materials are compatible with said sealants, prior to commencing any Work, this Section.

C. Confirm all backer rods are correct size, prior to starting any Work, this Section.

D. Preinstallation Adhesion Testing: Install a sample for each test location, as indicated within Contract Documents.
   1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
   2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
   3. Arrange for sealant Manufacturer's technical representative to be present during tests.
   4. Record each test on Preinstallation Adhesion Test Log as indicated.

5. If any sample fails, review products and installation procedures, consult Manufacturer, or take other measures that are necessary to ensure adhesion; retest in a different location; if unable to obtain satisfactory adhesion, report to Architect.
6. After completion of tests, remove remaining sample material and prepare joints for new sealant installation.

3.02 PREPARATION

A. Remove all loose materials, foreign matter that might impair adhesion of sealant.

B. Thoroughly clean all joints, prime as necessary, in full accordance with Manufacturer's instructions.

C. Perform all preparation in full accordance with Manufacturer's instructions and ASTM C1193.

D. Mask all elements, surfaces adjacent joints from any damage, disfigurement ,due to sealant Work.

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

3.03 INSTALLATION

A. Install all Work, this Section, in full accordance with sealant Manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations fully complying with ASTM C1193.

C. Install acoustical sealant application Work in full accordance with ASTM C919.

D. Measure all joint dimensions, size joint backers as required to achieve width to depth ratio, neck dimension and surface bond area recommended by Manufacturer.

E. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
   1. Width/depth ratio of 2:1.
   2. Neck dimension no greater than 1/3 of the joint width.
   3. Surface bond area on each side not less than 75 percent of joint width.

F. Install bond breaker backing tape where backer rod cannot be used.

G. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

H. **Do not** install sealant when ambient temperature is outside Manufacturer's recommended temperature range, or will be outside that range during the entire curing period.

I. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

J. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Owner shall employ an independent testing agency to perform field quality control inspection and testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Perform field quality control inspection, testing accordingly.

D. Replace all failed portions of sealants, using same materials and procedures as indicated for original installation.

E. Replace any destructive test location damage immediately after evaluation and recording of said results.

3.05 POST OCCUPANCY

A. Post Occupancy Inspection: Perform visual inspection of entire Scope of Work, this particular Project, at a time when all sealant joints have opened to their greatest width. Report all failures and immediately replace same.

END OF SECTION

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non fire rated hollow metal doors and frames.
B. Hollow metal frames for wood doors.
C. Fire rated hollow metal doors and frames.
D. Thermally insulated hollow metal doors with frames.
E. Sound rated hollow metal doors and frames.
F. Commercial security hollow metal doors and frames.
G. Detention security hollow metal doors and frames.
H. Bullet resistant hollow metal doors and frames.
I. Blast resistant hollow metal doors and frames.
J. Hurricane resistant hollow metal doors and frames.
K. Tornado resistant hollow metal doors and frames.
L. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

A. Section 08 71 01 - Door Hardware Groups.
B. Section 08 80 00 - Glazing.
C. Section 09 91 13 - Exterior Painting.
D. Section 09 91 23 - Interior Painting.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.
B. ASCE: American Society of Civil Engineers.
C. HMMA: Hollow Metal Manufacturers Association.
D. NAAMM: National Association of Architectural Metal Manufacturers.
E. NFPA: National Fire Protection Association.
F. SCIF: Sensitive Compartmented Information Facility.
G. SDI: Steel Door Institute.
H. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY "...

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames; 2025.
C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2024.
D. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2024.
E. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.
F. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2025.

G. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

H. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip; 2025b.

I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

J. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

K. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2024.

L. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

M. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

N. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

O. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

P. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

Q. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

R. ASTM E336 - Standard Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings; 2025.

S. ASTM E413 - Classification for Rating Sound Insulation; 2022.

T. ASTM E1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation; 2022.

U. ASTM F1450 - Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities; 2012a (Reapproved 2019).

V. ASTM F2247 - Standard Test Method for Metal Doors Used in Blast Resistant Applications (Equivalent Static Load Method); 2018.

W. ASTM F2927 - Standard Test Method for Door Systems Subject to Airblast Loadings; 2021.

X. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

Y. FBC TAS 201 - Impact Test Procedures; Testing Application Standard; 1994.

Z. FBC TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure; Testing Application Standard; 1994.

AA. FBC TAS 203 - Criteria for Testing Products Subject To Cyclic Wind Pressure Loading; Testing Application Standard; 1994.

BB. FEMA P-320 - Taking Shelter from the Storm: Building or Installing a Safe Room for Your Home; 2024.

CC. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2024.

DD. FLA (PAD) - Florida Building Code Online - Product Approval Directory; Current Edition.

EE. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; 2020.

FF. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

GG. IEEE 299 - IEEE Standard Method for Measuring the Effectiveness of Electromagnetic Shielding Enclosures; 2006 (Reaffirmed 2012).

HH. ITS (DIR) - Directory of Listed Products; Current Edition.

II. Miami (APD) - Approved Products Directory; Miami-Dade County; Current Edition.

JJ. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.

KK. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

LL. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2024.

MM. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

NN. NAAMM HMMA 850 - Fire-Rated Hollow Metal Doors and Frames; 2014.

OO. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2018.

PP. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

QQ. NAAMM HMMA 862 - Guide Specifications for Forced Entry/Bullet Resistant (FE/BR) Security Hollow Metal Doors and Frames; 2023.

RR. NAAMM HMMA 863 - Guide Specifications for Detention Security Hollow Metal Doors and Frames; 2024.

SS. NAAMM HMMA 865 - Guide Specifications for Sound Control Hollow Metal Door and Frame Assemblies; 2013.

TT. NAAMM HMMA 866 - Guide Specifications for Stainless Steel Hollow Metal Doors and Frames; 2012 (Reapproved 2018).

UU. NAAMM HMMA 867 - Guide Specifications for Laminated Core Hollow Metal Doors and Frames; 2016.

VV. NCSC (TS) - Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities; 2021.

WW. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.

XX. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2025.

YY. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

ZZ. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

AAA. UFC 4-010-01 - DoD Minimum Antiterrorism Standards for Buildings; 2018, with Editorial Revision (2024).

BBB. UL (DIR) - Online Certifications Directory; Current Edition.

CCC. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

DDD. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

EEE. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

FFF. UL 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, accurately representing construction, color, finish and surface texture.

E. Design Submittals: Manufacturer to submit anchor design analysis calculations for blast-resistant doors signed and sealed by specialty design engineer experienced in this type of work and licensed in the State in which the Project is located.

F. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

G. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

H. Manufacturer's Qualification Statement.

I. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products Specified in this Section, with not less than (15) Fifteen years documented xperience.

B. Manufacturer Qualifications: Provide hollow metal doors and frames from SDI Certified Manufacturer: https://steeldoor.org/sdi-certified.com.

C. Installer Qualifications: Company specializing in performing Work of type Specified, with not lesss thank (15) Fifteen years documented experience.

D. Maintain at Existing Project Site, copies of reference standards relating to installation of those Products specified.

1.07 DELIVERY, STORAGE, HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in full accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

1.08 PROJECT CONDITIONS

A. Field Measurements: **Confirm all**dimensions, each opening via Existing Project Site field measurements, prior to commencement of any fabrication, this Section..

1.09 COORDINATION

A. Coordinate installation of all anchorages for hollow metal frames. Furnish setting drawings, templates and directions for all installing anchorages, including sleeves, concrete inserts, anchor bolts and items with integral anchors. Deliver such items to project site in time for scheduled installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
   2. Curries, an Assa Abloy Group company: www.assaabloydss.com.
   3. Mesker, dormakaba Group; FDJ Series Drywall Frames: www.meskeropeningsgroup.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Hurricane-Resistant and Tornado-Resistant Hollow Metal Doors and Frames:

1. Premier Steel Doors and Frames; Severe Windstorm Rated Doors & Frames: www.trustpremier.com.
2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Blast Resistant Hollow Metal Doors and Frames:
1. AMBICO Limited: www.ambico.com.
2. Krieger Specialty Products; Blast and Pressure Resistant Doors: www.kriegerproducts.com.
3. Substitution: Reference Section01 60 00 - Product Requirementst for additional Content.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
4. Door Edge Profile: Manufacturers standard for application indicated.
5. Typical Door Face Sheets: Flush.
6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
    a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.
    b. Based on NAAMM HMMA Custom Guidelines: Provide at least A25/ZF75 (galvannealed) for interior applications, and at least A60/ZF180 (galvannealed) or G60/Z180 (galvanized) for corrosive locations.

B. Hollow Metal Panels: Same construction, performance, and finish as doors.

C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 3 - Extra Heavy-duty.
    b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.
    d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
    e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
    f. Thermal properties to rate at a fully operable minimum U-Factor 0.374 and R-Value 2.53, including insulated door, Mercury thermal break frame and threshold.

g. Top and Bottom Edges: Reinforce top and bottom of each door with continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel shall include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers will not be acceptable.
h. Hinge Reinforcement: Minimum 7 gauge (3/16"), plate 1-1/4" x 9".
i. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6, Current Edition, with reinforcing plates from same material as door face sheets.

2. Based on NAAMM HMMA Custom Guidelines:
   a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
   b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
   c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
   d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in accordance with ASTM E84, and completely enclosed within interior of door.
4. Door Thermal Resistance: R-Value of as indicated on drawings.
5. Door Thickness: 1-3/4 inches, nominal.
6. Top Closures: Flush with top of faces and edges.
7. Door Face Sheets: Flush.
8. Weatherstripping: Reference Contract Documents for additional Content.
9. Door Finish: Factory primed and field finished.

C. Interior Doors, Non Fire Rated:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.
   b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Based on NAAMM HMMA Custom Guidelines:
   a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
   b. Performance Level 1 - Light Duty, in full accordance with NAAMM HMMA 805.
   c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
   d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
4. Door Thickness: 1-3/4 inches, nominal.
5. Door Face Sheets: Flush.
6. Door Finish: Factory primed and field finished.
7. Top and Bottom Edges: Reinforce tops and bottoms of each door with continuous steel channel not less than16 gauge, extending the full width of the door and welded to the face sheet.
8. Hinge Reinforcement: Minimum 7 gauge (3/16"), plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
9. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6, Current Edition, with reinforcing plates from same material as door face sheets.

D. Fire Rated Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.

b. Physical Performance Level B, 500,000 cycles; in full accordance with ANSI/SDI A250.4.
c. Model 1 - Full Flush.
d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.

2. Based on NAAMM HMMA Custom Guidelines: Comply with NAAMM HMMA 850 requirements for fire-rated doors.
a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
b. Performance Level 1 - Light Duty, in full accordance with NAAMM HMMA 805.
c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.

3. Fire Rating: As indicated on drawings, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").

4. Temperature Rise Rating (TRR) Across Door Thickness: In full accordance with all local codes and those Local Authorities having Jurisdiction..

5. Provide units listed and labeled by UL (DIR) or ITS (DIR).
a. Attach fire rating label to each fire rated unit.

6. Smoke and Draft Control Doors (Indicated with letter "S" on Drawings and/or Door Schedule): Self closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
a. Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
b. Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
c. Label: Include the "S" label on fire-rating label of door.

7. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.

8. Door Thickness: 1-3/4 inches, nominal.

9. Door Face Sheets: Flush.

10. Door Finish: Factory primed and field finished.

E. Sound Control Door Assemblies: Refer to Section 08 34 73.

F. Sound Rated Interior Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
a. Level 1 - Standard-duty.
b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
c. Model 1 - Full Flush.
d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.

2. Based on NAAMM HMMA Custom Guidelines:
a. Comply with guidelines of NAAMM HMMA 865 for Sound Control Hollow Metal Doors and Frames.
b. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
c. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.

3. Sound Transmission Class (STC) Rating of Door and Frame Assembly: STC of 39, minimum, calculated in full accordance with ASTM E413, and tested in full accordance with ASTM E90.

4. Outdoor Indoor Transmission Class (OITC) Rating of Door and Frame Assembly: OITC of 35, minimum, calculated in accordance with ASTM E1332, and tested in full accordance with ASTM E90.
5. Sound Transmission Loss (TL) of Door and Frame Assembly: TL of 40 dB at 500 to 1250 Hz, minimum, in full accordance with ASTM E90 testing.
6. Door Core Material: Manufacturer's construction as required to fully meet those acoustic requirements delineated within Contract Documents,
7. Door Thickness: As required to meet acoustic requirements indicated.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Sound Seals: Integral, in door and/or frame.
11. Opening Force of Sound Rated Doors, Non Fire Rated: 5 pounds, maximum, in compliance with ADA Standards.

G. Doors; Interior and Exterior Interior and Exterior:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 1 - Standard-duty.
   b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Based on NAAMM HMMA Custom Guidelines:
   a. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
   b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Door Face Metal Thickness: 14 gauge, 0.067 inch, minimum.
   d. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Commercial Security Rating Impact Testing: Comply with forced entry, static load, and soft or hard body impact testing for Class 1 in accordance with NAAMM HMMA 862 requirements.
4. Detention Security Facility Swinging Door Assemblies: Comply with Grade 1 security characteristics, in accordance with NAAMM HMMA 863 and ASTM F1450 requirements.
5. Bullet Resistance: UL 752, Threat Level Rating - Level 1.
6. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
   a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in accordance with ASTM E84, and completely enclosed within interior of door.
7. Door Thickness: As required to meet requirements indicated.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Stainless Steel, Type 304, for Severely Corrosive Conditions: No. 4 - General purpose polished finish, complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.
11. Hinge Rail and Reinforcement: Non-beveled edge, reinforced with continuous steel channel, 12 gauge, 0.093 inch minimum metal thickness, welded at 5 inch on center maximum, and compatible with 4-1/2 inch full mortise template and continuous geared hinges.

H. Blast Resistant Exterior Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 1 - Standard-duty.
   b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.

d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.

2. Based on NAAMM HMMA Custom Guidelines:
   a. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
   b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Door Face Metal Thickness: 14 gauge, 0.067 inch, minimum.
   d. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Blast Resistance (Static Loading): Provide doors capable of withstanding explosive pressure, in compliance with ASTM F2247, having damage level of Category IV, using Procedure A.
4. Blast Resistance (Dynamic Loading): Provide doors capable of withstanding explosive pressure, in compliance with ASTM F2927, having response damage of Category V.
5. Blast Resistance: Complies with U.S. Department of Defense (DoD) UFC 4-010-01 standards with "High" levels of protection.
6. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements..
   a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in full accordance with ASTM E84, and completely enclosed within interior of door.
7. Door Thickness: As required to meet requirements indicated.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Stainless-Steel, Type 304, for Severely Corrosive Conditions: No. 4 - General purpose polished finish, fully complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.
11. Hinge Rail and Reinforcement: Non-beveled edge, reinforced with continuous steel channel, 12 gauge, 0.093 inch minimum metal thickness, welded at 5 inch on center maximum, and compatible with 4-1/2 inch full mortise template and continuous geared hinges.

I. Hurricane Resistant Doors:
1. Comply with Florida Building Code (FBC) test protocols for High Velocity Hurricane Zone (HVHZ) FBC TAS 201, FBC TAS 202 and FBC TAS 203.
2. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
   a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
   b. Wind-Borne Debris Resistance: Door and frame components shall have FLA (PAD) approval or Miami (APD) approval for Large and Small Missile impact and pressure cycling at design wind loads.
3. Hurricane Shelter Application: Comply with ICC 500 standard.
   a. Residential: Designed and tested to comply with FEMA P-320 residential shelter door assembly guidelines.
   b. Commercial: Designed and tested to comply with FEMA P-361 community shelter door assembly guidelines.
4. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 3 - Extra Heavy-duty.
   b. Physical Performance Level A, 1,000,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
5. Based on NAAMM HMMA Custom Guidelines:
   a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.

b. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
c. Physical Performance Level C, 250,000 cycles; in fullaccordance with ANSI/SDI A250.4.
d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.

6. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
7. Door Thickness: 1-3/4 inches, nominal.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Stainless Steel, with Type 304 Alloy for Moderately Corrosive Conditions: Same as stainless-steel door finish, complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.

J. Tornado Resistant Doors:
1. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
b. Wind-Borne Debris Resistance: Door and frame components shall have FLA (PAD) approval, Miami (APD) approval, or UL (DIR) approval for Large and Small Missile impact and pressure cycling at design wind loads.
2. Tornado Shelter Application: Comply with ICC 500 standard.
a. Residential: Designed and tested to comply with FEMA P-320 residential shelter door assembly guidelines.
b. Commercial: Designed and tested to comply with FEMA P-361 community shelter door assembly guidelines.
3. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
a. Level 3 - Extra Heavy-duty.
b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
c. Model 1 - Full Flush.
d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
4. Based on NAAMM HMMA Custom Guidelines:
a. Comply with guidelines of NAAMM HMMA 866 for Stainless-Steel Hollow Metal Doors and Frames.
b. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
c. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
5. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
6. Door Thickness: 1-3/4 inches, nominal.
7. Door Face Sheets: Flush.
8. Door Finish: Factory primed and field finished.
9. Stainless Steel, with Type 304 Alloy for Moderately Corrosive Conditions: No.4 - Brushed satin finish, complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Knock Down Type.

1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
2. Frame Metal Thickness: 14 gauge, 0.067 inch, minimum.
3. Frame Finish: Factory primed and field finished.
4. Weatherstripping: Separate, see Section 08 71 00.

D. Interior Door Frames, Non Fire Rated: Full profile/continuously welded type.
1. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
3. Frame Finish: Factory primed and field finished.

E. Door Frames, Fire Rated:
1. Fire Rating: Same as door, labeled.
2. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
3. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
4. Frame Finish: Factory primed and field finished.

F. Soun -Rated Door Frames:
1. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
2. Frame Finish: Factory primed and field finished.

G. Bullet Resistant Door Frames: Comply with UL 752, with same level of bullet resistance as door; face welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Frame Finish: Factory primed and field finished.

H. Commercial and/or Detention Security Resistant Door Frames: With same security resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Frame Finish: Factory primed and field finished.

I. Blast Resistant Door Frames: With same blast resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Frame Finish: Factory primed and field finished.

J. Hurricane Resistant Door Frames: With same hurricane resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Stainless-Steel Finish: Same as stainless-steel door finish.
3. Frame Finish: Factory primed and field finished.

K. Tornado Resistant Door Frames: With same tornado resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Stainless-Steel Finish: Same as stainless-steel door finish.

L. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

M. Mullions for Pairs of Doors: Fixed, with profile similar to jambs.

N. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

O. Transom Bars: Fixed, of profile same as jamb and head.

P. Provide mortar guard boxes for hardware cut outs in frames to be installed in masonry or to be grouted.

Q. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

R. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 FINISHES

A. Primer: Rust inhibiting, complying with ANSI/SDI A250.10, door Manufacturer's standard.

B. Factory Finish: Complying with ANSI/SDI A250.3, manufacturer's standard coating.
   1. Color: As selected by Architect from Manufacturer's full range of options.

C. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
   1. Fire Rated Frames:

2.06 ACCESSORIES

A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As delineated within Contract Documents.
   2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel.
   3. Metal Finish: Beige polyester powder coating.
   4. Glazing: 1/4 inch thick, tempered glass, in full mpliance with those requirements of Authorities having Jjurisdiction.
   5. Manufacturers:
      a. All Metal Stamping: www.allmetalstamping.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

B. Glazing: As specified in Section 08 80 00, factory installed.

C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

D. Astragals and Edges for Double Doors: Pairs of door astragals, and door edge sealing and protection devices.
   1. UL listed products in compliance with requirements of authorities having jurisdiction.
   2. Provide surface mounted astragal to cover or fill space for full door height between pair of doors or door and adjacent jamb.
   3. Astragal Type: Split, two parts, and with automatic locking, cutouts for other door hardware, and sealing gasket.
   4. Edge Type: Beveled edge
   5. Material: Aluminum.
   6. Metal Finish: Beige powder coating.
   7. Provide non-corroding fasteners at exterior locations.
   8. Manufacturers:
      a. All Metal Stamping: www.allmetalstamping.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Astragals for Double Doors: Specified in Section 08 71 00.
   1. Exterior Doors: Steel, Z-shaped.
   2. Fire Rated Doors: Steel, shape as required for fire rating.

F. Mechanical Fasteners for Concealed Metal to Metal Connections: Self drilling, self tapping, steel with electroplated zinc finish.
   1. Manufacturers:
      a. ITW Commercial Construction North America; ITW CCNA Buildex Teks Select Series: www.ITWBuildex.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

H. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

I. Temporary Frame Spreaders: Provide (1) One per each door frame.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** existing conditions, prior to commencing any Work, this Section.

B. **Confirm all** opening sizes, tolerances are correct, prior to begining any Work, this Section.

C. **Verify all** finished walls are in plane, as required to ensure proper door alignment, Work, this Section.

3.02 PREPARATION

A. Thoroughly coat inside, all frames, scheduled to be installed within masonry, grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install all doors, frames in full accordance with Manufacturer's written instructions, all related requirements of specified door and frame standards or custom guidelines indicated.

B. Install prefinished frames, only after painting and wall finishes are complete.

C. Install fire rated units in full accordance with NFPA 80.

D. Coordinate all frame anchor placement with wall construction.

E. Grout all frames within masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform same.

F. Install all hardware, as delineated within Contract Documents.
   1. Fully comply with all recommended practice, hardware placement, doors and frames, while in full accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

G. Fully comply with all glazing installation requirements per Section 08 80 00 - Glazing.

H. Coordinate installation of all electrical connections to electrical hardware items.

I. **Replace all damaged materials, this Section, immediately.**

3.04 TOLERANCES

A. Clearances Between Doors, Frames: Fully comply, all necessary requirements, including specified frame standards, custom guidelines and in full accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. **Adjust all** Work, this Section, as required to ensure smooth, balanced door operation, all openings.

END OF SECTION

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SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall and ceiling mounted access doors, panels.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide detailed Product data including sizes, types, finishes, hardware, scheduled locations, and details for all adjoining work.

C. Manufacturer's Installation Instructions: Written installation instructions delineating all installation requirements, this particular Project.

PART 2 PRODUCTS

2.01 ACCESS DOORS, PANELS ASSEMBLIES

2.02 WALL, CEILING MOUNTED ACCESS DOORS, PANELS

A. Wall, Ceiling Mounted Access Doos, Panels: Factory fabricated doors, frames, including fully assembled units with welded corner joints, filled and ground flush; square, without rack or warp; coordinate all requirements with particular installation assembly being used, each unit.
   1. Material: Steel.
   2. Style: Exposed frame with door surface flush with frame surface.
   3. Door Style: Single thickness with rolled or turned in edges.
   4. Heavy Duty Frames: (16) Sixteen gauge, minimum thickness.
   5. Heavy Duty Single Steel Sheet Door Panels: (16) SIxteen gauge, minimum thickness.
   6. Insulation: Non combustible mineral wool or glass fiber.
   7. Steel Finish: Painted, Primed.
   8. Factory Primed and Finished: Powder coated finish, color as selected by Architect from Manufacturer's full range of options.
   9. Hardware:
      a. Hardware for Fire Rated Units: As required for correspondng listing and those Local Authorities having Jurisdiction.
      b. Hinges, Non Fire Rated Units: Concealed, constant force closure spring type.
      c. Latch, Lock: Tamperproof tool operated cam latch.
      d. Number of Locks, Latches Required: As recommended by Manufacturer for each particular unit, minimum (1) one per unit..
      e. Gasketing: Extruded neoprene, around perimeter of door, panel.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** rough openings are correctly sized and located.

3.02 PREPARATION

A. **Thoroughly clean** all surfaces, prior to beginning any Work, this Section.

B. Prepare all surfaces, as required to fully comply with Manufacturer's written instructions, this particular Project.

3.03 INSTALLATION, PROTECTION

A. **Install all units** in full accordance with Manufacturer's written instructions.

B. **Install all frames** plum, level and secure rigidly in place.

C. **Position all units,** as required to provide convenient access to concealed equipment.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Secton, immediately.**

END OF SECTION

SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sectional doors

B. Operating hardware, related supports.

1.02 RELATED REQUIREMENTS

A. Reference Section 07 92 00 - Joint Sealants.

B. Reference Section 08 71 00 - Door Hardware.

C. Reference Section 09 91 13 - Exterior Painting.

D. Reference Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

C. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

E. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

I. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

J. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024.

K. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

M. DASMA 102 - American National Standard Specifications for Sectional Doors; 2018.

N. ITS (DIR) - Directory of Listed Products; Current Edition.

O. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).

P. NEMA MG 00001 - Motors and Generators; 2024.

Q. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

R. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

S. UL (DIR) - Online Certifications Directory; Current Edition.

T. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

C. Product Data: Show component construction, anchorage method, and hardware.

D. Product Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accuratly represent constuction, color, sheen and finish.

E. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Operation Data: Include normal operation, troubleshooting, and adjusting.

I. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.

J. Specimen warranty.

K. Warranty: Submit Manufacturer's Warranty while ensuring all forms have been completed in Owner's name and registered with Manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products delineated within Contract Documents, minimum (10) Ten Years documented experience.

B. Installer Qualifications: Company specializing in performing Work delineated within Contract Documents, minimum (15) Fifteen Years documented experience.

C. Comply with all applicable code requirements, including those of local Authorities Having Jurisdiction, relatinhg to motors and motor controls.

D. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL, Testing Firm acceptable to local Authorities Having Jurisdiction, Reference Drawin

1.06 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Correction Period: Replace all defective Work immediately.

C. Manufacturer Warranty: Provide (15) Fifteen Year Warranty, all Work, this Section.

PART 2 MAN

2.01 MANUFACTURERS

A. Sectional Doors:
   1. Basis of Design: Haas Door; Product CHT-2032-20.
      a. Include 1/2-inch thick insulted tempered glazing.
   2. Amarr: www.amarr.co.
   3. C.H.I. Overhead Door: www.chiohd.com.
   4. Clopay Building Products: www.clopaydoor.com.
   5. Overhead Door Corporation: www.overheaddoor.com.
   6. Wayne-Dalton, a Division of Overhead Door Corporation: www.wayne-dalton.com.
   7. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Flexible Impact-Resistant Door Sections:
   1. Amarr; SuperFlex Impact Sections: www.amarr.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PERFORMANCE REQUIREMENTS

A. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.

B. Air Leakage Rate: Less than 0.40 cfm/sq ft when tested in accordance with ASTM E283/E283M at test pressure difference of 1.57 psf.

C. Thermal Transmittance: U-factor of 0.31 Btu/hr sq ft degrees F, maximum, in accordance with DASMA 102.

2.03 STEEL DOORS

A. Doors: Flush steel, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
   1. Door Panels: Steel construction; outer steel sheet of 20 gauge, 0.0359 inch minimum thickness, flush profile; inner steel sheet of 20 gauge, 0.0359 inch minimum thickness, flat profile; core reinforcement sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; polyurethane insulation.
   2. Door Panels: Stile and rail construction, of steel sheet 0.058 inch minimum thickness, with welded joints; rabbeted weather joints at meeting rails.
   3. Door Nominal Thickness: 2 inches thick.
   4. Exterior Finish:
      a. Factory applied acrylic baked enamel finish, color as selected by Architect from Manufacturer's full range of options
   5. Interior Finish:
      a. Factory primed per Manufacturer's standards.
      b. Factory applied acrylic baked enamel finish, color as selected by Architect from Manufacturer's full range of options.
   6. Glazed Lites: Full panel width, number of rows as indicated on the drawings; set in place with resilient glazing channel.
      a. Glazing: Annealed float glass; insulated glass units; clear; 1/2 inch nominal overall thickness.
   7. Electric Operation: Electric control station, Reference Electrical Drawings and Contract Documents for additional Content.

2.04 COMPONENTS

A. Track: Rolled galvanized steel, 0.120 inch minimum thickness; 3 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.
   1. High lift, hold 24-inches minimum from ceiling structure

B. Track: Galvanized steel angles, 0.094 inch minimum thickness; 2-5/16 x 4 inch size, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.

C. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
   1. 3-inch rollers, including ten 5/16-inch steel ball bearings, full floating within hardened steel races.

D. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
   1. Manual Operation: Requiring maximum exertion of (15) Fifteen pounds, force to open.
   2. 100K cycle.

E. Sill Weatherstripping: One piece resilient rubber strip, one piece; fitted to bottom door panel, full length contact.

F. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

G. Head Weatherstripping: EPDM rubber seal, one piece full length.

H. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

I. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

2.05 MATERIALS

A. Sheet Steel: Hot dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.

B. Float Glass: Provide float glass glazing.
   1. Heat Strengthened and Fully Tempered Types: ASTM C1048.

C. Insulation: Foamed-in-place polyurethane, bonded to facing.

D. Metal Primer Paint: Zinc molybdate type.

2.06 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
   1. Provide interlock switches on motor operated units.
   2. All wiring, including low voltage, shall be set within concuit and concealed within masonry.

B. Electric Operators:
   1. Basis of Design: Liftmaster J, Jackshaft Operator.
      a. Manually operable in case of power faliure.
   2. Mounting: Side mounted on cross head shaft.
   3. Motor Enclosure:
      a. Exterior Doors: NEMA MG 00001, Type 4; open drip proof.
   4. Motor Rating: 1 hp; continuous duty.
   5. Motor Voltage: Coordinate with electrical drawings.
   6. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
   7. Controller Enclosure: NEMA EN 10250, Type 1.
   8. Opening Speed: 12 inches per second.
   9. Brake: Adjustable friction clutch type, activated by motor controller.
   10. Manual override in case of power failure.
   11. See Section 26 05 83 for electrical connections.

C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.

D. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
   1. Disconnect Switch: Factory mount disconnect switch within control panel.
   2. (24) Twenty Four volt circuit.
   3. Recess mounted, at interior door jamb.
   4. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
      a. Primary Device: Provide Double set of photoelectric eye sensors located at bottom of door jamb, approximately (24) twenty four inches above finish floor, final location shall be field determined by Owner Representative, based on apparatus configuration .
   5. Radio Control Antenna Detector, Long Distance Antenna: Reference Electrical Drawings and Specifications for additional requirements. Provides enhanced range through radio communications and reduced interference, ensuring that door opens and closes reliably at all times.
      a. Hand Held Transmitter: Digital control, resettable two (2) per door operator.
      b. Contact, as required to signal door shall be completely open.

c. Adjustable timer that closes door, as required to secure the station after a predetermined amount of time.

6. Red, Green Warning Lights, power off of operator, one per each exit door opening. (Liftmaster RGL24LY) final location shall be field determined by Owner Representative, based on apparatus configuration, this particular Project.

E. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all wall openings are ready to receive Work and opening dimensions, tolerances are within specified limits.

B. Confirm all electric power is available and of correct characteristics.

3.02 PREPARATION

A. Prepare all openings, as required to permit correct installation of door unit, perimeter air and vapor barrier seals.

B. Apply primer to entirewood frame.

3.03 INSTALLATION

A. Install each door unit assembly in full accordance with Manufacturer's instructions.

B. Anchor each assembly to wall constructio, building framing without any distortion or stress.

C. Securely brace all door tracks suspended from structure. Secure all acks to structural members only.

D. Fit and align entirte door assembies, including hardware.

E. Coordinate installation of entire lectrical service. Complete all power and control wiring from disconnect to unit components.

F. Install perimeter trim.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

A. Adjust all door assembies, as required for smooth operation and full contact with all weatherstripping.

B. Have Manufacturer's Field Representative present, as required to confirm proper operation and identify any additional required adjustments to door assemblies for proper operation, this particular Project.

3.06 CLEANING

A. **Thoroughly clean all Work, this Section.**

B. **Remove all labels, markings, all Work, this Section.**

3.07 PROTECTION

A. **Protect all Work, this Section from damage.**

B. **Do not permit any traffic through overhead door openings, following adjustment, thorough cleaning.**

C. **Replace all damaged Work, this Section, immediately.**

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for all doors.

B. Lock cylinders for doors that hardware is specified in other sections.

C. Thresholds.

D. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

A. Section 08 14 16 - Flush Wood Doors.

B. Section 08 16 13 - Fiberglass Doors.

C. Section 08 43 13 - Aluminum Framed Storefronts.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. BHMA (CPD) - Certified Products Directory; Current Edition.

C. BHMA A156.1 - Standard for Butts and Hinges; 2021.

D. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.

E. BHMA A156.4 - Door Closers and Pivots; 2024.

F. BHMA A156.6 - Standard for Architectural Door Trim; 2021.

G. BHMA A156.7 - Template Hinge Dimensions; 2022.

H. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.

I. BHMA A156.20 - Standard for Strap and Tee Hinges, and Hasps; 2021.

J. BHMA A156.22 - Standard for Gasketing; 2021.

K. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

L. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

M. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.

N. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.

P. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all hardware Products with Owner's Representative.

B. Coordinate Manufacture, fabrication, and installation of all Products that door hardware is installed upon.

C. Furnish al necessary templates, door, frame preparation to all Manufacturers, fabricators of any Products requiring internal reinforcement, door hardware.

D. Keying Requirements Meeting:
   1. Attendance Required:
      a. Contractor.
      b. Owner.
      c. Architect.
   2. Agenda:

a. Establish keying requirements.
b. Verify locksets and locking hardware are functionally correct for project requirements.

3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
5. Deliver established keying requirements to Manufacturers.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings, Door Hardware Schedule: Submit detailed listing that includes each item of hardware scheduled to be installed. Use only that door numbering scheme, as included in Contract Documents.
1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
2. Provide complete description for each door listed.

D. Keying Schedule:
1. Submit PDF copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing products Specified within this Section with minimum (15) Fifteen years documented experience.

1.07 DELIVERY, STORAGE, HANDLING

A. Package all hardware items individually; label and identify each package with door opening code, as required to match door hardware schedule.

1.08 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Manufacturer's Warranty: Provide detailed Warranty against any defects in material, workmanship for period indicated. Complete all forms within Owner's name and register same with Manufacturer.
1. Closers: (5) Five years, minimum.
2. Exit Devices: (5) Five years, minimum.
3. Locksets and Cylinders: (10) Ten years, minimum.
4. All Remaining Hardware: (3) Three years, minimum.

PART 2 PRODUCTS

2.01 DESIGN, PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
2. Accessibility: ADA Standards and ICC A117.1.
3. Applicable provisions of NFPA 101.
4. Listed and certified compliant with specified standards by BHMA (CPD).
5. Auxiliary Hardware: BHMA A156.16.
6. Straps and Tee Hinges: BHMA A156.20.
7. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.

8. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.

D. Lock Function: Provide lock and latch function numbers and descriptions of Manufacturer's series. See Door Hardware Schedule.

E. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
      a. Self-drilling (Tek) type screws **are not permitted.**
   3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
   4. Provide wall grip inserts for hollow wall construction.
   5. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.
   6. Concealed Fasteners: **Do not** use through or sex bolt type fasteners upon door panel sides, as concealed fastener locations.

2.02 HINGES

A. Hinges: Fully comply with BHMA A156.1, Grade 1.
   1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
      a. Provide hinge width required to clear surrounding trim.
   2. Provide hinges on every swinging door.
   3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
   4. Provide ball-bearing hinges at each door.
   5. Provide non-removable pins on exterior outswinging doors.
   6. Provide following quantity of butt hinges for each door:
      a. Doors From 60 inches High up to 90 inches High: Three hinges.
      b. Doors 90 inches High up to 120 inches High: Four hinges.
      c. Dutch Doors: Two hinges each leaf.

2.03 REMOVABLE MULLIONS

A. Keyed removable steel mullions.

B. Removal single operation of the mortise cylinder.

C. Self locking when re installed, without use of the cylinder key.

D. 1 1/4" mortise cylinder with straight cam.

E. Finish: Match door frame.

2.04 EXIT DEVICES

A. Exit Devices: Fully comply with BHMA A156.3, Grade 1.

2.05 LOCK CYLINDERS

A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Coordinate with Owner's standards for keying requirments
   2. Provide cams and/or tailpieces as required for locking devices.
   3. Within specific Door Sections, when provisions for lock cylinder are being referenced to this Section, provide specified lock cylinder and keyed to building keying system, unless otherwise indicated.

2.06 CYLINDRICAL LOCKS

A. Cylindrical Locks (Bored): Fully comply with BHMA A156.2, Grade 1, 4000 Series.
   1. Bored Hole: 2-1/8 inch diameter.

2. Latchbolt Throw: 1/2 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
   a. Finish: To match lock or latch.
5. Provide a lock for each door, unless otherwise indicated that lock is not required.
6. Trim: Provide trim as indicated on hardware schedule, and other trim as required for complete installation.

2.07 CLOSERS

A. Closers: Fully comply with BHMA A156.4, Grade 1.
   1. Type: Surface mounted to door.
   2. Provide door closer on each exterior door and where indicated on the hardware shedule.
   3. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
   4. Mount closers as indicated on the hardware schedule. Where mounting is not indicated, provide mounting as follows:
      a. At corridor entry doors, mount closer on room side of door.
      b. At outswinging exterior doors, mount closer on interior side of door.

2.08 PROTECTION PLATES

A. Protection Plates: Fully comply with BHMA A156.6.

B. Edges: Beveled, all sides.

C. Fasteners: Countersunk screw fasteners.

2.09 KICK PLATES

A. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
   1. Size: (10) Ten inch high by 2 inch, less than scheduled door width.

2.10 WALL STOPS

A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide wall stops to prevent damage to wall surface upon opening door.
   2. Type: Bumper, concave, wall stop.
   3. Material: Aluminum housing with rubber insert.

2.11 WEATHERSTRIPPING, GASKETING

A. Weatherstripping and Gasketing: Comply with BHMA A156.22.
   1. Head and Jamb Type: Adjustable.
   2. Door Sweep Type: Encased in retainer.
   3. Material: Aluminum, with brush weatherstripping.

2.12 FINISHES

A. Finishes: Identified in Door Hardware Schedule on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all doors, frames are ready to receive Work, this Section; labeled, fire rated doors, frames, properly installed, and dimensions are as shown within Contract Documents.

B. Confirm alll electrical power is available, and of correct characteristics, as required to power, operate corresponding hardware devices.

3.02 INSTALLATION

A. Install all hardware in full accordance with Manufacturer's written instructions and all applicable codes.

B. Install all hardware upon fire rated doors, frames in full accordance with applicable codes and NFPA 80.

C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. For Wood Doors: Install in full compliance with DHI WDHS.3 recommendations.
   2. Mounting heights in compliance with ADA Standards:
      a. Locksets: 40-5/16 inch.
      b. Push Plates/Pull Bars: 42 inch.
      c. Deadlocks (Deadbolts): 48 inch.
      d. Exit Devices: 40-5/16 inch.

D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 ADJUSTING

A. Adjust all Work, this Section, as required by Section 01 70 00 - Execution and Closeout Requirements.

B. Adjust all hardware, as required for smooth, proper operation.

C. Adjust all gasketing, as required for complete, continuous seal; **replace same**, if unable to make complete seal.

3.04 CLEANING

A. Thoroughly clean all hardware in full accordance with Manufacturer's written instructions, following all final adjustments to same.

B. Thoroughly clean all surfaces adjacent hardware installation.

C. **Replace any** items that cannot be thoroughly cleaned, as r

3.05 PROTECTION

A. Protect all Work, this Section, from damage

B. Replace all damaged Work, this Section.

END OF SECTION

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SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Reference Drawings for additional Content and Glazing Units.

C. Glazing units.

D. Glass coatings.

1.02 RELATED REQUIREMENTS;

A. Section 08 11 13 - Hollow Metal Doors and Frames.

B. Section 08 43 13 - Aluminum Framed Storefronts.

C. Section 08 44 13 - Glazed Aluminum Curtain Walls.

D. Section 08 51 13 - Aluminum Windows.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C1036 - Standard Specification for Flat Glass; 2025.

E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

G. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

H. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2024.

I. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

J. GANA (GM) - GANA Glazing Manual; 2022.

K. GANA (SM) - GANA Sealant Manual; 2008.

L. GANA (LGRM) - Laminated Glazing Reference Manual; 2019.

M. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (Reaffirmed 2016).

N. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

O. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

P. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data on Insulating Glass Unit, Glazing Unit, and Plastic Film Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Provided (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction, glazing, color, tint and finish.

E. Warranty Documentation: Submit Manufacturer detailed Warrant, ensure all forms have been completed within Owner's Name and registered with said Manufacturer.

1.05 QUALITY ASSURANCE

A. Perform all Work in full accordance with GANA (GM), GANA (LGRM), IGMA TM-3000 and Manufacturer's written installation instructions. Store and maintain (1) One copy, each document upon Existing Project Site

B. Manufacturer Qualifications: Company specializing in Manufacturing Products delineated within Contract Documents, minimum (15) Fifteen years documented experience.

C. Installer Qualifications: Company specializing in performing Work Specified this Section, minimm (15) Fifteen years documented experienc.

1.06 FIELD CONDITIONS

A. **Do not** any Work, this Section, when ambient temperature is less than (50) Fifty de degrees Fahrenheit.

B. Maintain minimum ambient temperature before, during and mimimum (72) Seventy Two hours immediately following placement of all Work, this Section.

1.07 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Insulating Glass Units: Provide minmum (10) Ten Year Manufacturer's Warranty, as required to include coverage for seal failure, interpane dusting or misting, including providing al Products to replace failed units.

C. Laminated Glass: Provide minimum 910) Ten Year Manufacturer's Warranty, as required to include coverage for delamination, including providing all Products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
   1. Cardinal Glass Industries: www.cardinalcorp.com.
   2. Guardian Glass, LLC: www.guardianglass.com.
   3. Pilkington North America Inc: www.pilkington.com.
   4. Saint Gobain North America: www.saint-gobain.com.
   5. Vitro Architectural Glass: www.vitroglazings.com.
   6. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PERFORMANCE REQUIREMENTS, EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Design Pressure: Calculated in accordance with ASCE 7.
   2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
   3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7
   4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
   5. Glass thicknesses listed are minimum.

B. Weather Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
   1. In conjunction with all weather barrier related materials delineated within Contract Documents, as follows:
   2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
   3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
   1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
   2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
   3. Solar Optical Properties: Fully comply with all NFRC 300 testing methods.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
   1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
   2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
   3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
   4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
   5. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality - Q3, with color and performance characteristics as indicated.
   6. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
   1. Basis of Design: Vitro Architectural Glass: www.vitroglazings.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Insulating Glass Units: Types as indicated.
   1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
   2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
   3. Warm-Edge Spacers: Low-conductivity thermoplastic with desiccant warm-edge technology design.
      a. Spacer Width: As required for specified insulating glass unit.
      b. Spacer Height: Manufacturer's standard.
   4. Spacer Color: Black.
   5. Edge Seal:
      a. Dual Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
      b. Color: Black.
   6. Purge interpane space with dry air, hermetically sealed.

C. Type G5 Insulating Glass Units: Vision glass, double glazed.
   1. Space between lites filled with air.
   2. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.

b. Coating: Solarban 60 solar control (sputtered), on #2 surface.
3. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
a. Tint: Clear.
4. Total Thickness: 1 inch.
5. Glazing Method: Dry glazing method, gasket glazing.

D. Type G6 - Insulating Glass Units: Safety glazing.
1. Applications:
a. Glazed lites in exterior doors.
b. Glazed sidelights and panels next to doors.
c. Other locations required by applicable federal, state, and local codes and regulations.
d. Other locations indicated on drawings.
2. Space between lites filled with argon.
3. Glass Type: Same as Type G5 except use fully tempered float glass for both outboard and inboard lites.
4. Total Thickness: 1/2 inch.
5. Warm edge spacer.
6. Glazing Method: Dry glazing method, gasket glazing.

2.05 BASIS OF DESIGN, INSULATING GLASS UNITS

A. Basis of Design - Insulating Glass Units: Vision glazing, with low-e coating.
1. Applications: Exterior insulating glass glazing unless otherwise indicated.
2. Space between lites filled with argon.
3. Total Thickness: 1 inch.
4. Glazing Method: Dry glazing method, gasket glazing.
5. Spacer Color: Black.
6. Edge Seal:
a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
7. Color: Black.
8. Purge interpane space with dry air, hermetically sealed.
9. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet between point of fabrication and point of installation to permit pressure equalization of air space.
a. Capillary Tubes: Tubes to remain open and be of length and material type in accordance with insulating glass fabricator's requirements.
10. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
11. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
a. Low E Coating: Vitro Architectural Glass (formerly PPG Glass) Solarban 60 on #2 surface.
12. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick.

2.06 GLAZING UNITS

A. Type G14 Radiation Shielding Glazing: Transparent lead-bearing glass for gamma and/or X-ray protection.
1. Applications: Vision panels located in lead lined partitions and other locations indicated on drawings.
2. Thickness: Lead equivalency requirement.
3. FDA Registration: Provide product registered with FDA as a medical device in category KPY, Personnel Protective Shield.
4. Glazing Method: As recommended by Manufacturer.

2.07 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 VERIFICATION, CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. **Verify all** surfaces, glazing channels, recesses are thoroughly clean, free of any obstructions that may impede moisture movement, weeps are clear and that all support framing is ready to receive glazing system.

C. Proceed with glazing system installation, only after all unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. **Thoroughly clean all** contact surfaces with Manufacturer recommended, appropriate solvent, wipe dry within maximum of 24 hours before glazing. **Remove all** coatings that are not tightly bonded to substrates.

B. **Seal all** glazing channels, recesses with substrate compatible primer, sealer.

C. Prime all surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. **Install all** glazing in full compliance with written instructions of glass, gaskets, and other glazing material Manufacturers.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. **Do not** exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent all glass from contact with any contaminating substances that may be the result of construction operations such as and not limited to the following; weld splatter, fire safing, plastering, mortar droppings, and paint.

3.04 INSTALLATION, DRY GLAZING METHOD

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 CLEANING

A. **Remove all** excess glazing materials from finish surfaces, immediately after application, using only those solvents, cleaners recommended by Manufacturers.

B. **Remove all** nonpermanent labels, immediately after glazing installation has complete.

C. **Thoroughly clean all** glazing surfaces, in full accordance with Manufacturer's written recommendations.

3.06 PROTECTION

A. Following completion of all Work, this Section, immediately mark panes with "X" by using removalble tape, paste,only, **do not mark** heat absorbing or reflective units.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all damaged Work, this Section, immediately.**

END OF SECTION

SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Broadloom carpet.
   3. Carpet tile.
   4. Thin set ceramic and stone tile.

B. Removal of existing floor coverings.

C. Preparation of new and existing concrete floor slabs for installation of floor coverings.

D. Testing of concrete floor slabs for moisture and alkalinity (pH).

E. Testing of existing concrete floor slabs for moisture and alkalinity (pH) has already been conducted; test report is attached.

F. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

G. Patching compound.

H. Remedial floor coatings.

I. Remedial floor treatment.

J. Remedial floor sheet membrane.

K. Preparation of new and existing wood-based floors and subfloors for installation of new floor coverings.

1.02 RELATED REQUIREMENTS

A. Section 01 22 00 - Unit Prices.

B. Section 01 23 00 - Alternates.

C. Section 01 40 00 - Quality Requirements.

D. Section 03 30 00 - Cast in Place Concrete.

1.03 PRICE, PAYMENT PROCEDURES

A. Alternates: Reference Section 01 23 00 - Alternates for additional Content.

B. Alternate for Alternate Flooring Adhesive: **Do not** include the cost of alternate adhesive within base bid; state on the bid form, total additional cost for alternate adhesive, installed, in the event such remediation may be required.

C. Alternate for Remedial Floor Coating or Sheet Membrane: **Do not** include cost of floor coating or underlaymentwithin base bid; state on the bid form, total additional cost for floor coating, installed, in the event such remediation may be required.

D. Unit Prices: Reference Section 01 22 00 - Unit Prices for additional Content.

1.04 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2024.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM D4259 - Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application; 2024.

D. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

E. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

F. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

G. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.05 ADMINISTRATIVE REQUIREMENTS

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

1.06 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Visual Observation Report: For existing floor coverings to be removed.

C. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

D. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
   1. Manufacturer's qualification statement.
   2. Certificate: Manufacturer's certification of compatibility with types of flooring applied over remedial product.
   3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
   4. Manufacturer's installation instructions.
   5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

E. Testing Agency's Report:
   1. Description of all areas tested; include plans and photographs if hel
   2. Summary of conditions encountered.
   3. Moisture and alkalinity test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Product data for recommended remedial coating.
   7. Certificate: Include certification of accuracy by authorized official of testing agency.
   8. Submit report directly to Owner.
   9. Submit report to Architect.
   10. Submit report not more than two business days after conclusion of testing.

F. Adhesive Bond and Compatibility Test Report.

G. Floor Moisture Testing Technician Certificate: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician- Grade I certificate.

1.07 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing will be performed by an independent testing agency employed and paid by Owner.

B. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

C. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.

D. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
   2. Acceptable Testing Agencies:
      a. Independent Floor Testing & Inspection, Inc.: www.ifti.com.
      b. Additional Testing Agencies, as approved by Owner, Architect
      c. Substitutions: Not Permited...

E. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.
   5. Notify Owner when specified ambient conditions have been achieved and when testing will start.
   6. Notify Architect when specified ambient conditions have been achieved and when testing will start.

F. Floor Moisture Testing Technician Qualifications: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician Certification- Grade I.

G. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver, store, handle and protect all Products, in full accordance with Manufacturer’s written instructions.

B. Deliver all materials within Manufacturer’s packaging; include installation instructions.

C. Keep all materials from freezing.

1.09 FIELD CONDITIONS

A. Maintain ambient temperature within all spaces where concrete testing is being performed, and for at least (48) Forty Eight hours prior to testing, at not less than (70) Seventy degrees Fahreheit, nor more than (80) Eighty degrees Fahrenheit.

B. Maintain relative humidity within all spaces where concrete testing is being performed, and for at least (48) Forty Eight hours prior to testing, at not less than (45) Forty FIve percent and not more than (

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering Manufacturer's recommended Product, suitable for conditions, and compatible with adhesive and floor covering, this particular Project Site. In the absence of any recommendation from flooring Manufacturer, provide Product with following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   4. Products:

a. ARDEX Engineered Cements: www.ardexamericas.com.
b. Floor Seal Technology, Inc: www.floorseal.com.
c. H.B. Fuller Construction Products, Inc.: www.tecspecialty.com.
d. LATICRETE International, Inc.: www.laticrete.com.
e. USG Corporation : www.usg.com.
f. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single or multi layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. Thickness: 1/8 inch, maximum.
2. Thickness: As required for application and in accordance with Manufacturer's installation instructions.
3. Use only Product recommended by independent Testing Agency.
4. Products:
a. Allied Construction Technologies, Inc.: www.actechperforms.com.
b. ARDEX Engineered Cements: www.ardexamericas.com.
c. Bona US: www.bona.com.
d. Crown Polymers, a division of American Polymers Corporation: www.crownpolymers.com.
e. Custom Building Products: www.custombuildingproducts.com.
f. Floor Seal Technology, Inc.: www.floorseal.com.
g. GCP Applied Technologies: www.gcpat.com.
h. H.B. Fuller Construction Products, Inc. www.tecspecialty.com.
i. H.B. Fuller Construction Products, Inc; TEC LiquiDam EZ: www.tecspecialty.com.
j. Koster American Corporation: www.kosterusa.com.
k. LATICRETE International, Inc; LATICRETE VAPOR BAN E: www.laticrete.com.
l. Loba-Wakol, LLC; WAKOL PU 280 Moisture Barrier: www.loba-wakol.com.
m. Mapei Corporation; Planiseal VS: www.mapei.com.
n. Maxxon Corporation; Maxxon MVP One Primer: www.maxxon.com.
o. Polycoat Products; Polycoat PC FMB: www.polycoatusa.com.
p. Proflex Products, Inc; Moisture Barrier 25: www.proflex.us.com.
q. Rust-Oleum Corporation; TVB - Topside Vapor Barrier 100% Solids: www.rustoleum.com.
r. SINAK Corporation; VECT-R: www.sinak.com.
s. Stauf USA, LLC; ERP-270 Perma-Seal: www.staufusa.com.
t. USG Corporation; Durock CoverPrep: www.usg.com.
u. UZIN UTZ NORTH AMERICA, INC; UZIN PE 460 with UZIN PE 280: https://us.uzin.com.
v. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Remedial Floor Treatment: Penetrating, spray-applied, silicate-based product intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. Use product recommended by testing agency.
2. Products:
a. AVECS, LLC; RE-ACT: www.avecs.build.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Remedial Floor Sheet Membrane: Pre-formed multi-ply sheet membrane installed over concrete subfloor and intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. Thickness: 28 mil (0.028 inch).
2. Tape: Types recommended by underlayment manufacturer to install membrane and cover seams.
3. Products:
   a. GCP Applied Technologies: www.gcpat.com.
   b. Mapei Corporation: www.mapei.com.
   c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.

B. Perform following operations in the order indicated:
1. Existing concrete slabs (on grade and elevated) with existing floor coverings:
   a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
   b. Removal of existing floor covering.
2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
   a. Do not attempt to remove coating or penetrating material.
   b. Do not abrade surface.
   c. Remove existing coatings and curing agents from surface according to recommendations of remedial coating manufacturer.
   d. Prepare surface according to recommendations of remedial coating manufacturer and according to ASTM D4259.
3. Preliminary cleaning.
4. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
6. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
7. Specified remediation, if required.
8. Patching, smoothing, and leveling, as required.
9. Other preparation specified.
10. Adhesive bond and compatibility test.
11. Protection.

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

for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL, EXISTING FLOOR COVERINGS

A. Fully comply with all local, State,Federal and those Local Authorities having Jurisdiction regulations, recommendations of RFCI (RWP), as applicable to this particular Project.

B. Dispose of all previously removed materials, in full accordance with all local, State, Federal and those Local Authorities having Jurisdiction, regulations.

3.03 PRELIMINARY CLEANING

A. Thoroughly clean all floors of any dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, milde or other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event any testing values exceed floor covering Manufacturer's limits, perform remediation as indicated. In the absence of Manufacturer limits, perform remediation if any Test values exceed (30 Threee pounds per (1000) One Thousand square feet, wtihin a (24) Twenty Four hour period.

F. Report: Report all information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report all information required by the test method.

3.06 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds,

then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.

3. Use of a digital pH meter with probe is acceptable; follow meter Manufacturer's instructions.

C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.07 PREPARATION

A. Protection of all Work in Place.

B. Reference individual floor covering Section(s) for additional Content.

C. Fully comply with all recommendations, Testing Agency.

D. Fully comply with all written requirements, recommendations, floor covering Manufacturer.

E. Fill and smooth all surface cracks, grooves, depressions, control joints and other non moving joints, irregularities within patching compound.

F. Do not fill expansion joints, isolation joints, or any other moving joints.

3.08 ADHESIVE BOND, COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering Manufacturer.

3.09 APPLICATION, REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating Manufacturer.

3.10 APPLICATION, REMEDIAL FLOOR TREATMENT

A. Fully comply with all written requirements, recommendations of treatment Manufacturer.

3.11 INSTALLATION, REMEDIAL FLOOR SHEET MEMBRANE

A. Install in full accordance with sheet membrane Manufacturer's written instructions.

3.12 PROTECTION

A. **Protect all Work, this Section from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Acoustic insulation.

E. Cementitious backing board.

F. Gypsum wallboard.

G. Joint treatment and accessories.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).

B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).

D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

E. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

G. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.

H. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020 (Reapproved 2024).

I. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

J. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

K. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

L. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2024.

M. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

N. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022, with Editorial Revision (2023).

O. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.

P. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

R. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

S. ASTM E413 - Classification for Rating Sound Insulation; 2022.

T. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

U. GA-600 - Fire Resistance and Sound Control Design Manual; 2024.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of gypsum board assemblies with size, location and installation of service utilities.

B. Sequencing: Install service utilities in an orderly and expeditious manner.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data:
   1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.
   2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

C. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing Work of this Section, minimum (15) Fifteen years documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies, fully complying with ASTM C840 and GA-216.

B. Fire Resistance Rated Assemblies: Provide completed assemblies in full compliance with all applicable codes,

2.02 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
   1. Structural Grade: As required to meet design criteria.
   2. Corrosion Protection Coating Designation: G40, or equivalent in accordance with AISI S220.

B. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Studs: "C" shaped with knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: "C" shaped.
   4. Flexible Track: Flexible framing consisting of adjustable leg straps and pivoting, hinged track brackets designed to provide curved framing assemblies of varying radii.

C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.

2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
3. Provide components UL listed for use in UL listed fire resistance rated head of partition joint systems as delineated within Contract Documents.
4. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire resistance rating of the wall assembly.

D. Deflection and Firestop Track: Intumescent strip factory applied to track flanges expands when exposed to heat or flames to provide a perimeter joint seal.

2.03 BOARD MATERIALS

A. Manufacturers, Gypsum Based Board:
1. American Gypsum Company: www.americangypsum.com.
2. CertainTeed Corporation: www.certainteed.com.
3. Georgia-Pacific Gypsum: www.gpgypsum.com.
4. Gold Bond Building Products, LLC provided by National Gypsum Company: www.goldbondbuilding.com.
5. USG Corporation: www.usg.com.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   a. Mold resistant board is required at all locations.
3. At Assemblies Indicated with Fire Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.

C. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas, including tub and shower surrounds and shower ceilings.
2. Application: Horizontal surfaces behind tile in wet areas including countertops and throughout toilet rooms.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
4. ANSI Cement-Based Board: Non gypsum based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
   a. Thickness: 5/8 inch.

D. Backing Board For Non Wet Areas: Water resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Type: Regular and Type X, in locations indicated.
5. Type X Thickness: 5/8 inch.
6. Regular Board Thickness: 5/8 inch.
7. Edges: Tapered.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed mineral fiber, friction fit type, unfaced; thickness 2 inches.

B. Fire and Sound Attenuating Insulation: Sprayed cellulose fire rated material for cavities in wall assemblies.
1. Surface Burning Characteristics: Provide assemblies with Class I rating, when tested in accordance with ASTM E84.

2. Sound Transmission Class (STC): 56, calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Joint Compound: Setting type, field mixed.

D. Finishing Compound: Surface coat and primer, takes the place of skim coating.

E. Screws for Fastening of Gypsum Panel Products to Cold Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self piercing tapping screws, corrosion-resistant.

F. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all Existing Poject Siteconditions are appropriate to all Work, this Section, prior to commencing any Work.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in full accordance with ASTM C1007AISI S220 and Manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

C. Studs: Space studs as indicated.
   1. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Furring for Fire-Resistance Ratings: Install as required for fire-resistance ratings indicated and to GA-600 requirements.

F. Blocking: Install mechanically fastened steel sheet blocking for support of:
   1. Wall mounted cabinets.
   2. Plumbing fixtures.
   3. Toilet partitions.
   4. Toilet accessories.
   5. Wall mounted door hardware.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in full accordance with Manufacurer's instructions.

3.04 BOARD INSTALLATION

A. Fully comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire Resistance Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water resistant sealant.

D. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in full accordance with ANSI A108.11 and Manufacturer's instructions.

E. Installation on Metal Framing: Use screws for attachment of gypsum board.

3.05 INSTALLATION, TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.06 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 1: Fire resistance rated wall areas, above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

C. Fill and finish all joints and corners of cementitious backing board as recommended by Manufacturer.

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch within (6) Six feet, any direction.

3.08 PROTECTION

A. Protect all Work, this Section from damage.

B. Replace all damaged Work, this Section, immediately.

END OF SECTION

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SECTION 09 30 00
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile, wall applications.

B. Cementitious backer board, tile substrate.

C. Non ceramic trim.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2024.

B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2023.

C. ANSI A108.1b - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

D. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

E. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.

F. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2023.

G. ANSI A108.5 - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.

H. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 2023.

I. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2024).

J. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2023.

K. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).

L. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

M. ANSI A108.12 - Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2023.

N. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).

O. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.

P. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2020.

Q. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.

R. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

S. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2023.

T. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2025.

U. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting, (14) Fourteen Calndar Days prior to starting any Work, this Section; require mandatory attendance, all affected Subcontractors.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide Manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Product Samples: Provide (2) Two Product Samples, Manufacturer's standard size, each tile type delineated within Contract Documents, as required to accurately represent construction, color sheen and pattern.

1.05 QUALITY ASSURANCE

A. Maintain one copy of ANSI A108/A118/A136, TCNA (HB), and TCNA (HB-GP) upon Existing Project Site, at all time.

B. Manufacturer Qualifications: Company specializing in manufacturing types of Products specified, this section, minimum (15) Fifteen years, documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Protect all adhesives from freezing, overheating in full accordance with Manufacturer's written instructions.

1.07 FIELD CONDITIONS

A. **Do not** install any solvent based Products within an unventilated environment.

B. Maintain ambient and substrate temperature, above (60) Sixty degrees Fahrenheit and below (90) Ninety degrees Fahrenheit, during installation and curing of materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All Products by same Manufacturer.
   1. Basis of design, those Manufacturers, Products delineated within Contract Documents.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 TRIM, ACCESSORIES

A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, set with tile mortar or adhesive.
   1. Products:
      a. Schluter Systems: Those Products delineated within Contract Documents.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same Manufacturer.

B. Improved Latex Portland Cement Mortar Bond Coat: ANSI A118.15.
   1. Applications: Use this type of bond coat where Large and Heavy Tile (LHT) mortar is indicated.
   2. Products:
      a. Mapei Corporation; Granirapid System: www.mapei.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 GROUTS

A. Provide setting and grout materials from same Manufacturer.

B. Epoxy Grout: ANSI A118.3 chemical resistant and water cleanable epoxy grout.
   1. Color(s): As selected by Architect from Manufacturer's full range of options.
   2. Products:
      a. Mapei Corporation; Kerapoxy CQ: www.mapei.com.

2.05 MAINTENANCE MATERIALS

A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
   1. Applications: Between tile and plumbing fixtures.
   2. Color(s): As selected by Architect from manufacturer's full line.
   3. Products:
      a. Mapei Corporation; Mapesil T Plus: www.mapei.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.06 ACCESSORY MATERIALS

A. Waterproofing Membrane: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
   1. Fluid or Trowel Applied Type:
      a. Material: Synthetic rubber or Acrylic.
      b. Thickness: 25 mils, minimum, dry film thickness.
      c. Products:
         1) Mapei Corporation; Mapelastic AquaDefense: www.mapei.com.
         2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 7/16 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all wall surfaces are smooth, flat within all required tolerances, dust free and are ready to receive Work of this Section.

3.02 PREPARATION

A. Protect all surrounding Work from any damage.

B. Thoroughly vacuum clean all surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board Manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

E. Prepare all substrate surfaces for adhesive installation in full accordance with adhesive Manufacturer's written instructions.

3.03 INSTALLATION, GENERAL

A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) or TCNA (HB-GP) recommendations, as applicable.

B. Lay tile to pattern indicated. **Do not** interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

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

E. Form internal angles square and external angles bullnosed.

F. Install non ceramic trim in full accordance with Manufacturer's instructions.

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

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

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

J. Grout all tile joints unless directed otherwise by Architect.

K. At those changes within plane and tile to tile control joints, use tile sealant in lieu of grout, with either bond breaker tape or backer rod as appropriate to prevent three sided bonding.

3.04 INSTALLATION, WALL TILE

A. On exterior walls install in full accordance with TCNA (HB) Method W244, thin-set over cementitious backer units, with waterproofing membrane.

B. Over cementitious backer units on studs, install in full accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

3.05 CLEANING

A. **Thoroughly clean all Work, this Section.**

3.06 PROTECTION

A. **Do not permit any traffic over Work**, this Section for minimum (14) Fourteen calendar days, immediately following installation completion.

B. **Protect all Work, this Section from damage.**

C. **Replace all damaged Work, this Section, immediately.**

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. **Do not** install acoustical units until after interior wet work is completely dry and indoor relative humidity has been stabilized, as required by controlling Mechanical systems.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Thoroughly indicate all grid layout, including all related dimensioning, particular to this Project.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction, color, pattern and finish.

E. Manufacturer's Installation Instructions: Provide detailed written instructions,including all perimeter conditions, special procedures appropriate to this particular Project..

1.05 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing those Products specifiedwith in this Section, minimum (10) Ten years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in Manufacturing those Products specified within this Section, minimum (10) Ten years documented experience.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature, minimum (65) Sixty Five degrees Fahrenheit, maximum humidity (35) Thirty Five percent prior to, during, and immediately following installtion completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc; Products as indicated on the drawings: www.armstrongceilings.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Suspension Systems:
   1. Armstrong World Industries, Inc.: Products as delineated within Contract Documents utilizing IBC previously approved Berc clip (2) Two inch permiter **will not** be permitted, this particualar Project.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category applicable and complying with the following:
   1. Those Local Authorities having Jurisdiction.

2.03 SUSPENSION SYSTEM(S)

A. Exposed Suspension System: Hot dipped galvanized steel grid with steel cap.
   1. Profile: Tee; 9/16 & 15/16 inch face width in locations as indicated on the drawings.
   2. Finish: Baked enamel.
   3. Color: White.

B. Exposed Suspension System: Aluminum grid and cap; factory-applied closed-cell foam gaskets.
   1. Application(s): As directed by Architect.
   2. Structural Classification: Intermediate-duty, when tested in full accordance with ASTM C635/C635M.
   3. Profile: Tee; 15/16 inch face width.
   4. Finish: Baked enamel.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Perimeter Moldings: Same metal and finish as grid.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Confirm all** existing conditions prior to commencing any Work, this Section.

B. **Verify entire** hangers layout **will not** interfere with any other Work, this particular Project.

3.02 PREPARATION

A. **Install only** after all major above ceiling Scope of Work has previously been completed.

B. **Coordinate final** location of all hangers with other Work, already in place.

3.03 INSTALLATION, SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.

C. Suspension System, Non Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

E. **Do not** support any components, main runners or cross runners, if weight causes total dead load to exceed Manufacturr's deflection capability.

F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

G. **Do not** eccentrically load any part of system, or induce any rotation of runners.

3.04 INSTALLATION, ACOUSTICAL UNITS

A. **Install all** acoustical units in full accordance with Manufacturer's wrtten instructions.

B. **Fit all** acoustical units in place, free from any damage or other defects.

C. **Fit all** border trim neatly against abutting surfaces.

D. **Install all** acoustical units level, uniform in plane, and free from any twist, warp or dents.

E. Cutting Acoustical Units:

1. **Ensure all** field cut edges, are of same profile as factory edges.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in (6) Six feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: (2_ Two degrees.

3.06 CLEANING

A. Reference Section 01 70 00 - Execution and Closeout Requirements for additional Content.

B. **Thoroughly clean all** Work, this Section.

C. **Protect all** Work, this Section from damage.

D. **Replace all** damaged Work, this Section, immediately.

END OF SECTION

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SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Resilient stair accessories.

D. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 05 61 - Common Work Results for Flooring Preparation.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2025.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit Manufacturer's complete set of color samples for Architect's initial selection.

D. Verification Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate color, pattern and construction, each resilient flooring Product delineated within Contract Documents.

E. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

F. Certification: Prior to installation of flooring, submit written certification by flooring Manufacturer and adhesive Manufacturer that condition of subfloor is acceptable.

G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re waxing.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing specified flooring with minimum (15) Fifteen years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum (15) Fifteen years documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Upon receipt, immediately remove any shrink wrap and check all materials for any damage, correct style, color, quantity and run numbers.

B. Store all materials off floor within acclimatized, weather tight space.

C. Maintain temperature within said storage area between (60) Sixty and (80) Eighty degrees Fahrenheit.

1.07 FIELD CONDITIONS

A. Store all materials, not less than (36) Thirty Six hours, prior to start of installation, within Work area, at minimum temperature of (70) Seventy degrees Fahrenheit, as required to achieve temperature stability. Thereafter, maintain conditions, constantly at temperature above (65) Sixty Five degrees Fahrenheit.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Vinyl Composition Tile: Homogeneous, with color extending throughout thickness.
   1. Manufacturers:
      a. Armstrong Flooring; Standard Excelon Imperial Texture: www.armstrongflooring.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
   3. Size: 12 by 12 inch.
   4. Thickness: 0.125 inch.
   5. Color: As selected by Architect from Manufacturer's full range of options.

2.02 STAIR COVERING

A. Stair Treads and Risers: Rubber; full width and depth of stair tread in one piece.
   1. Manufacturers:
      a. Johnsonite, a Tarkett Company: www.johnsonite.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Nominal Thickness: 0.1875 inch.
   3. Nosing: Square.
   4. Color: As selected by Architect from Manufacturer's full range of options.

2.03 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TP, rubber, thermoplastic; style as scheduled.
   1. Manufacturers:
      a. Johnsonite, a Tarkett Company: www.johnsonite.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Finish: As selected by Architect from Manufacturer's full range of options.
   3. Length: Roll.
   4. Color: As selected by Architect from Manufacturer's full range of options.

2.04 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material Manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring Manufacturer.

C. Adhesive for Vinyl Flooring: As recommended by the flooring material Manufacturer.

D. Sealer and Wax: Types recommended by flooring Manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all surfaces are flat, to those tolerances acceptable to flooring Manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of any curing compounds, surface hardeners or other chemicals that might interfere with bonding of flooring to substrate.

B. Verify all wall surfaces are smooth, flat within those tolerances specified, dust free and ready to receive Work, this Section.

C. Cementitious Subfloor Surfaces: Confirm all substrates are ready for Work, this Section by testing for moisture, alkalinity (pH).
   1. Test in full accordance with Section 09 65 01 - Common Work Results for Flooring Preparation.

2. Obtain supplemental written instructions, if test results are not within limits recommended by resilient flooring Manufacturer and or adhesive materials Manufacturer.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

D. Thoroughly clean substrate.

E. Apply primer as required to prevent "bleed through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

3.04 INSTALLATION, TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

3.05 INSTALLATION, RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.06 INSTALLATION, STAIR COVERINGS

A. Adhere over entire surface. Fit accurately and securely.

3.07 CLEANING

A. **Remove all** excess adhesive from flooring, base and wall surfaces without generating any damage.

B. **Thoroughly clean** all Work, this Section within full accordance, Manufacturer's written instructions.

3.08 PROTECTION

A. **Prohibit any** traffic upon all Work, this Section for minimum (14) Fourteen calendar days, immediately following completion of installation.

B. Provide floor finishes, as delineated within Contract Documents.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 67 00
FLUID-APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid applied flooring and Base Materials.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide detailed Product Data describing physical and performance characteristics; sizes, patterns and all colors available, Manufacturer's full range of options.

C. Samples: Submit (2) Two Product Samples, Manufacturer's standard size,as required to accurately illustrate construction, color, pattern and finish.

D. Concrete Subfloor Test Report: Submit a copy ofmoisture and alkalinity (pH) test reports.

E. Manufacturer's Installation Instructions: Provide Manufacturer's written Installation instructions, including perimeter conditions, application rate and special procedures particular to this Project..

F. Manufacturer's Qualification Statement.

G. Applicator's Qualification Statement.

H. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing products, this section with minimum (10) Ten years documented experience.

1.05 MOCK UPS

A. Construct mock up(s) as required to serve as basis for evaluation of texture, workmanship and General Construction.
   1. Use same materials, methods for use in Work, this Section
   2. Use only previously approved design samples as basis for mock ups.
   3. Locate as directed by Architect.
   4. Minimum Size: (10) Ten feet square.

B. Obtain approval of said mock up, via Architect and Owner's Representative, prior to beginnng any Work, this Section.

C. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.06 DELIVERY, STORAGE, HANDLING

A. Store all materials, this Section, only within dry, secure areas.

B. Store all materials, this Section, minimum (5) five business days, prior to commencement of Work, this Section.

1.07 FIELD CONDITIONS

A. Maintain minimum temperature of (60) Sixty degrees Fahreheit, within storage areas.

B. Store all materialswith in area of installation, minimum period of (48) Forty Eight hours prior to beginning installation.

C. Maintain that ambient temperature, required by Manufacturer, minimum (72) Seventy Two hours prior to, during and (48) Thiry Six hours immediately following installation of Work, this Section.

PART 2 PRODUCTS

2.01 FLUID APPLIED, FLOORING SYSTEMS

A. Manufacturer and Product as delineated within Contract Documents.
   1. Substitutions: Reference Section 01 60 00-Product Requirements for additional Content.

B. Fluid Applied Flooring: Epoxy base coat(s), including broadcast aggregate.
   1. Aggregate: Vinyl flakes.
   2. Top Coat: Polyurethane, (2) Two coats
   3. System Thickness: 1/8 inch, nominal, dry film thickness.
   4. Texture: As directed by Architect.
   5. Color: As selected by Architect from Manufacturer's full range of options.

2.02 ACCESSORIES

A. Base Caps: Zinc with projecting base of 1/8 inch; color as selected by Architect from Manufacturer's full range of options.

B. Cant Strips: Molded of flooring resin material.

C. Subfloor Filler: That type recommended by fluid applied flooring Manufacturer.

D. Primer: That type recommended by fluid applied flooring Manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confim all subfloor surfaces are smooth, flat and within those tolerances specified for that type Work and ready to receive Work, this Section.

B. Verify all wall surfaces are smooth, flat and within those tolerances specified for that type of Work, dust free, and are ready to receive Work, this Section.

C. Confirm all subfloor surfaces are dust free and free of any substances that might impair bonding of materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify all substrates are ready for fluid applied flooring installation by testing for moisture and alkalinity.
   1. Test in full accordance with Section 09 05 61- Common Work Results for Flooring Preparation.
   2. Obtain additional instructions, if test results are not within limits recommended by fluid applied flooring Manufacturer.
   3. Follow those moisture and alkalinity remediation procedures, Section 09 05 61- Common Work Results for Flooring Preparation.

E. Verify all floor mounted utilities are located correctly.

3.02 PREPARATION

A. Remove any subfloor ridges and bumps. Fill all ow spots, cracks, joints, holes, and other defects with subfloor filler.

B. Prepare all concrete surfaces in full accordance with ICRI 310.2R.

C. Apply, trowel, and float filler, as required to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

D. Thoroughly vacuum clean substrate.

E. Apply primer to those surfaces required by flooring Manufacturer.

3.03 INSTALLATION, ACCESSORIES

A. Install cant strips at base of walls where flooring is scheduled to be extended up wall.

3.04 INSTALLATION , FLOORING

A. Apply in full accordance with Manufacturer's instructions.

B. Apply each coat to minimum thickness, as required my Manufacturer.

C. **Finish to fully level surface.**

D. Cove at all vertical surfaces.

3.05 PROTECTION

A. **Prohibit any traffic** upon floor finish, minimun (72) Seventy Two hours, immediately following installation.

B. **Protect all Work this Section, from amage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 68 13
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile Carpeting

B. Walk Off Tile Carpeting.

1.02 RELATED REQUIREMENTS

A. Section 09 05 61 - Common Work Results for Flooring Preparation.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Admiminstrative Requirements for additional Content.

B. Product Data: Provide detailed Product data, particular to this Project, describing all physical, performance characteristics, sizes, patterns, colors available, and methods of installation.

C. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction, color and pattern, each tile type selected.

D. Manufacturer's written Installation Instructions: Indicate all special procedures, perimeter conditions, particular to this Project.

E. Operation and Maintenance Data: Include all detailed maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in installing carpet tile with minimum (10) Ten Years documented experience and previously approved by Tile Carpeting Manufacturer.

1.06 FIELD CONDITIONS

PART 2 PRODUCTS

2.01 MATERIALS

A. Tile Carpeting: Tufted, Manufactured within (1) One dye lot.
   1. Product: As delineated within Drawings and Contract Documents.

B. Walk Off Tile Carpeting: Tufted, Manufactured within (1) One color dye lot.

C. 1. Product : Tarkett; Assertive Action, as delineated within Drawings and Contract Documents.

2.02 ACCESSORIES

A. Subfloor Filler: White premix latex type, as recommended by flooring material Manufacturer.

B. Edge Strips: As delineated within Drawings and Contact Documents.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all subfloor surfaces are smooth, flat, within tolerances required and ready to receive Work, this Section.

B. Confirm all subfloor surfaces are dust free and free of any substances that may impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify all substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test in full accordance with Section 09 05 61.
   2. Obtain additional instructions, if test results are not within those limits recommended by flooring material Manufacturer and or adhesive materials Manufacturer.

D. Confirm all floor mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare all floor substrates only as recommended by flooring and adhesive Manufacturers.

B. Remove all subfloor ridges and or bumps. Fill all low spots, cracks, joints, holes and any other defects within subfloor filler.

C. Apply, trowel, and float filler, as required to achieve smooth, flat, hard surface. Prohibit all traffic, until filler is fully cured.

D. Thoroughly vacuum clean entire substrate.

3.03 INSTALLATION

A. Commencement of installation shall constitute acceptance of all subfloor conditions.

B. Install all carpet tile in full accordance with Manufacturer's written instructions.

C. Blend all carpet tile from different cartons, as required to ensure minimal variation within color match.

D. Cut all carpet tile clean. Fit all carpet tile tight to intersection with all vertical surfaces without gaps.

E. Lay all carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Locate change of color or pattern between rooms under door centerlines.

G. Fully adhere all carpet tile to substrate.

H. Trim all carpet tile neatly at walls and around any interruptions.

I. Complete installation of all edge strips, as required to conceal any exposed edges.

3.04 CLEANING, PROTECTIO

A. **Remove all excess adhesive, all Work, this Section.**

B. **Thoroughly clean all Work, this Section.**

C. **Protect all Work, this Section, from Damage.**

D. **Replace alll Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non metallic roofing and flashing.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Ceramic and other types of tiles.
   9. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   10. Exterior insulation and finish system (EIFS).
   11. Glass.
   12. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting.

1.03 DEFINITIONS

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

1.04 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.05 SUBMITTALS

A. Referemce Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Provide (3) Three paper "draw down" samples, Manufacturer's standard size, as required to accurately represent construction, color and sheen.
   1. Where sheen is specified, submit samples in only that sheen.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Reference Section 01 60 00 - Product Requirements, for additional Content.
   2. Extra Paint and Finish Materials: (5) Five Gallons, each color used, from same Product run, store as directed by Owner's Representative
   3. Clearly label each container with Manufacturer's standard label and Color.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing those Products specified, minimum (15) Fifteen years documented experience.

1.07 DELIVERY, STORAGE, HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store within minimum ambient temperature of (60) Sixty degrees Fahrenheit and a maximum of (80) Eighty degrees Fahrenheit, within well ventilated area, and as required by Manufacturer's written instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product Manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. **Do not** apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: (50) Fifty degrees Fahrenheit for exterior; unless required otherwise by Manufacturer's written instructions.

E. Provide lighting level of (80) Eighty Foot Candles, measured mid height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Provide paints and finishes from the same Manufacturer to the greatest extent possible.
   1. Substitution of MPI-approved products by a different Manufacturer is preferred over substitution of unapproved products by the same manufacturer.

C. Paints:
   1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.

D. Primer Sealers: Same Manufacturer as top coats.

E. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PAINTS, FINISHES, GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.

4. **Do not** reduce, thin, or dilute any paint, finishes or add materials, unless such procedure is described explicitly within Manufacturer's written Product instructions.

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

C. Flammability: Fully comply with all applicable codes, surface burning characteristics.

D. Manufacturer and products: As identified within Contract Documents.
   1. Substitutions: Reference Section 01 60 00-Product Requirements for additional Content.

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

F. Colors: As indicated in Color Schedule.

2.03 PAINT SYSTEMS, EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including primed metal.
   1. Top Coat(s): Exterior Latex.
      a. Products:
         1) Sherwin-Williams Loxon XP Exterior. (MPI #10)
         2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 PRIMERS

A. Provide primers recommended by the Manufacturer for each substrate and finish coat combination.

2.05 ACCESSORY MATERIALS

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

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin any application of paints or finishes, until all substrates have been properly prepared.

B. Condiem LL Aurfaces are ready to receive Work as instructed by the product Manufacturer.

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

D. Test shop applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

A. Thoroughly clean all surfaces, remove any defects prior to application.

B. Prepare all surfaces using only those methods recommended by Manufacturer for achieving the best result for the substrate under these particular Existing Project Site onditions.

C. Remove or mask all surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing any surfaces for finishing.

D. Seal all surfaces that might cause bleed through or staining of topcoat.

E. Remove any mildew from impervious surfaces, by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.03 APPLICATION

A. Apply all Products in full accordance with Manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. **Do not** apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect any waste materials that could constitute fire hazard, place in closed, lockable metal containers and remove daily from Existing Projet Site.

3.05 PROTECTION

A. **Protect all Work this Section, from Damage.**

B. **Replace all Damaged Work this Section, immediately.**

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Materials for backpriming woodwork.

D. Scope: Finish interior surfaces exposed to view, unless fully factory finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Prime surfaces to receive wall coverings.
   3. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

E. **Do Not** Paint or Finish the Following Items:
   1. Items factory finished unless otherwise indicated; materials and products having factory applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel and lead items.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Ceramic and other tiles.
   9. Brick, architectural concrete, cast stone, integrally colored plaster, and stucco.
   10. Glass.
   11. Concrete masonry units in utility, mechanical, and electrical spaces.
   12. Acoustical materials, unless specifically indicated.
   13. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

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

F. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
2. MPI product number (e.g., MPI #47).
3. Cross reference to specified paint system products to be used in project; include description of each system.

C. Samples: Provide (3) Three paper "draw down" samples, Manufacturer's standard size, as rquired to accurately illustrate construction, color, mil. thickness and sheen.
1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.
3. Allow 30 days for approval process, after receipt of complete samples by Architect.
4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.

D. Manufacturer's Instructions: Indicate any special procedures, particular to this Project.

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

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Reference Section 01 60 00 - Product Requirements, for additional Content.
2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
3. Label each container with color in addition to the Manufacturer's label.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing Products specified, with minimum(15) Fifteen years documented experience.

1.05 DELIVERY, STORAGE, HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of (60) Sixty degreees Fahrenheit and a maximum of (80) Eighty degrees Fahrenheit, within well ventilated area, and as required by Manufacturer's written instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product Manufacturer.

B. Follow Mnufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 fc measured mid height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same Manufacturer.
1. If a single Manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
2. Substitution of other Products by the same Manufacturer is preferred over substitution of Products by a different Manufacturer.

B. Paints:
   1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com..
   2. Benjamine Morre & Co.: www.benjaminemoore.com
   3. Pittsburgh Paints: www.ppgpaints.com.

C. Primer Sealers: Same Manufacturer as top coats.

D. Substitutions: Referene Section 01 60 00 - Product Requirements for additional Content.

2.02 PAINTS, FINISHES, GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by Manufacturer based on testing and field experience.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.
   4. **Do not** reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

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

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Manufacturer and products: As incidicated on the drawings.
   1. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Sheens: Provide sheens specified; where sheen is not specified, sheen will be selected later by Architect from Manufacturer's full range of options.

F. Colors: As selected by Architect from Manufacturer's full range of options.
   1. In finished areas, finish pipes, ducts, conduit and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PRIMERS

A. Provide all primers, as recommended by said Manufacturer, for each substrate and finish coat combination, this particular Project

B. Primers: Provide the following unless other primer is required or recommended by Manufacturer of top coats.
   1. Alkali Resistant Water Based Primer; MPI #3.
      a. Products:
         1) Sherwin-Williams Loxon Water Blocking Primer, Finish.
   2. Interior/Exterior Latex Block Filler; MPI #4.
      a. Products:
         1) Sherwin-Williams Loxon Block Surfacer. (MPI #4)
   3. Stain Blocking Primer; MPI #136.
      a. Products:
         1) Sherwin-Williams Extreme Block Stain Blocking Primer. (MPI #136)

2.04 ACCESSORY MATERIALS

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

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Do not** begin application of paints, finishes until all relatedsubstrates have been adequately prepared.

B. **Verify all** surfaces are ready to receive Work, this Section, as instructed, in writing by Product Manufacturer.

C. **Examine all** surfaces scheduled to be finished, prior to commencement of any Work, this Section. Report any conditions that may potentially affect proper application.

D. **Test all shop** applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Masonry, Concrete, and Concrete Masonry Units: (10) Ten percent.
   2. Interior Wood: (10) Ten percent, measured in full accordance with ASTM D4442.
   3. Concrete Floors and Traffic Surfaces: (8) Eight percent.

3.02 PREPARATION

A. Thoroughly clean all surfaces, as required to correct any defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Replace any existing paints or finishes that exhibit surface defects.

D. Remove all surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove all mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to fully dry.

G. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

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

I. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. **Do not** apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect any waste material that could constitute a fire hazard, place in lockable closed metal containers and remove daily from Existing Project Site.

3.05 PROTECTION

A. **Protect all Work this Section, from damage.**

B. **Replace all damaged Work this Section, immediately.**

END OF SECTION

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SECTION 10 21 13.17
PHENOLIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Phenolic Toilet Compartments.

B. Urinal Screens.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate all Work, this Section with placement, location of support framing, anchors within walls, ceilings, this particular Project.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide thoroughly detailed Product Data, including panel construction, hardware and accessories, particular to this Project.

C. Shop Drawings: Submit thoroughly detailed Shop Drawings, including plan, elevations, dimensions, supports, door swings and details, particular to this Project.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrating construction, color, pattern sheen and finish, particular to this Project.

E. Manufacturer's Installation Instructions: Provide thoroughly detailed written instructions, including all special procedures, particular to this Project.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Phenolic Toilet Compartments:
   1. ASI Accurate Partitions: www.asi-accuratepartitions.com.
   2. ASI Global Partitions: www.asi-globalpartitions.com.
   3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PHENOLIC TOILET COMPARTMENTS

A. Toilet Compartments: Factory fabricated doors, pilasters and divider panels made of solid phenolic core panels with integral melamine finish.
   1. Color: As selected by Architect from Manufacturer's full range of options.

B. Doors:
   1. Thickness: 3/4 inch.
   2. Width, Standard Use: 26 inches.
   3. Width, Handicapped Use: 36 inches.
   4. Height: 60 inch.

C. Panels:
   1. Thickness: 3/4 inch.
   2. Height: 60 inch.
   3. Depth: As delineated within Contract Documents.

D. Pilasters:
   1. Thickness: 3/4 inch.
   2. Width: As delineated wtihin Contract Documents, minimum 3 inch.

E. Screens: 3/4 inch, as required to match compartments, wall mounted,minimum (3) three brackets per panel, including vertical support bracing, as required to match compartments.

2.03 ACCESSORIES

A. Pilaster Shoes: Formed ASTM A666, type 304 stainless steel, number (4) four finish, (4) four inch high, while fully concealing all floor fastenings.
   1. Provide adjustment for all floor variation, including screw jack through stainless steel saddles, integral within pilaster structure.

B. Head Rails: Hollow stainless steel, (1) one inch by (2) two inch, including anti grip profile and cast socket wall brackets.

C. Attachments, Screws, Bolts: Stainless steel, tamper proof type.
   1. For attaching panels, pilasters to brackets: Stainless steel through bolts including nuts, tamper proof type.

D. Hardware: Polished Stainless steel, only;
   1. Pivot hinges, gravity type, adjustable, as required for door close positioning; (3) three per door opening.
   2. Nylon bearings.
   3. Door Latch: Stainless steel slide type, including emergency access feature.
   4. Stainless steel door strike, keeper, including rubber bumper; mounted upon pilaster, in alignment with door latch.
   5. Stainless steel Coat Hook, including rubber bumper; one per compartment, mounting location as directed by Architect.
   6. Provide (1) one stainless steel door pull, each outswinging door.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all previously provided measurements are true, accurate.

B. Confirm all spacing between plumbing fixtures is true, accurate.

C. Verify all locations, built in framing, anchorage, bracing are true, accurate.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install all partitions secure, rigid, plumb and level, in full accordance with Manufacturer's written instructions.

B. Maintain maximum 3/8" air space between all walls, panels and between all walls, end pilasters.

C. Attach all panel brackets securely, using only Manufacturer's recommended anchor devices.

D. Attach all panels, pilasters to brackets. Locate all head rail joints, only at pilaster centerlines.

E. **Damaged finishes will not be permitted. Replace all Damaged Work, this Section, immediately.**

3.03 TOLERANCES

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

B. Maximum Variation From Plumb: 1/8 inch. 1/8 inch.

3.04 ADJUSTING

A. Adjust, align all hardware, as required to provide uniform clearance at vertical edge, all doors, not exceeding 3/16 inch.

B. Adjust all hinges, as required to position doors within partial open position, when unlatched. Return all out swinging doors to closed position.

C. Adjust all adjacent components, as required for consistency of line, plane.

END OF SECTION

SECTION 10 26 01
WALL PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.

C. Samples: Provide (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate construction, color pattern and finish

D. Warranty Documentation: Submit detailed Manufacturer's Warranty, particular to this Project, ensure all forms have been completed within Owner's name and registered with said Manufacturer.

E. Maintenance Data: Manufacturer's instructions for care and cleaning of each type of product. Include information about both recommended and potentially detrimental cleaning materials and methods.

1.04 DELIVERY, STORAGE, HANDLING

A. Deliver all Products within Manufacturer's original, undamaged protective packaging. Label all Products, as required to designate scheduled installation locations.

B. **Do not** deliver any Products to Existing Project site until all areas for storage and installation are fully enclosed, and interior temperatures, humidity are in full compliance with Manufacturer's written recommendations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Corner Guards:
   1. As outlined within Contract Documents.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PRODUCT TYPES

A. Corner Guards - Surface Mounted:
   1. Material: Polyethylene terephthalate (PET or PETG); PVC free with full height extruded aluminum retainer.
   2. Performance: Resist lateral impact force of (150) one hundred fifty pounds, at any point ,without damage.
   3. Surface Burning Characteristics: Provide only those assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   4. Width of Wings: (3) three inches.
   5. Corner: Square.
   6. Color: As selecte by Architect from Manufacturer's full range of options.
   7. Length: (1) One piece.

2.03 FABRICATION

A. Fabricate all components, only with tight joints, corners and seams.

B. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all rough openings, blocking and anchors are correctly sized and located.

B. Verify all substrate surfaces are clean, smooth and ready ot receive Work, this Section.
   1. Test all surfaces for adhesion in inconspicuous area, as recommended by Manufacturer. Follow adhesive Manufacturer's recommendations for remedial measures at locations and or application conditions, where adhesion test's results are unsatisfactory.

C. Start of installation constitutes acceptance of existing Project conditions.

3.02 INSTALLATION

A. Install all components in full accordance with Manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

3.03 TOLERANCES

A. Maximum Variation From Required Height: 1/8 inch.

B. Maximum Variation From Level or Plane For Visible Length: 1/16 inch.

3.04 CLEANING, PROTECTION

A. **Thoroughly clean all Work, this Section.**

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2025.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

D. ASTM B86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings; 2023.

E. ASTM C1036 - Standard Specification for Flat Glass; 2025.

F. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2024.

G. ASTM D4802 - Standard Specification for Poly(Methyl Methacrylate) Acrylic Plastic Sheet; 2016.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all Work with placement of internal partitition reinforcement, toilet partitions systems reinforcement, as required to receive and anchor any necessary attachment devices.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administratative Requirements for additional Content.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's written Installation Instructions: Provided detailed direction relating to any special conditions, procedures, particular to this Project.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. Basis of Design: Those Products indicated within Contract Documents.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 MATERIALS

A. Accessories, General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind all welded joints smooth.
   2. Fabricate any units made of sheet metal, as required to produce only seamless sheets including flat surfaces.

B. Keys: Provide Owner's Representative with (3) Three keys, each accessory and (2) Two Master keys, each accessory.

C. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Galvanized Sheet Steel: Hot dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Zinc Alloy: Die cast, ASTM B86.

G. Acrylic Plastic Sheet: ASTM D4802.

H. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics fully complying with ASTM C1503.

I. Adhesive: (2) Two component, waterproof, epoxy type.

J. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper proof, security type.

K. Expansion Shields: Fiber, lead, or rubber as recommended by accessory Manufacturer for component, substrate as required, this particular Project.

2.03 FINISHES

A. Stainless Steel: Satin Finish.

B. Chrome/Nickel Plating: ASTM B456, SC 2, Satin Finish.

C. **Back paint all components**, where contact is made with any building finishes, as required to prevent electrolysis.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all Existing Project Site conditions**, prior to commencing any Work.

B. **Confirm exact locations, all accessories**, prior to begining any Work.

3.02 PREPARATION

A. Deliver all inserts and rough in frames to Existing Project Site, as required to provid timely installation.

B. Provide all templates and rough-in measurements as required.

3.03 INSTALLATION

A. **Install all accessories** in full accordance with Manufacturers' written instructions.

B. **Install all accessories** plumb, level, and securely, rigidly anchored to substrate.

C. **Mounting Heights:** As delineated witin Contract Documents and required by those Local Authorities having Jurisdiction.

3.04 PROTECTION

A. **Protect all Work, this Section, from damage.**

B. **Replace all damaged Work, this Section, immediately**.

END OF SECTION

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire blankets.

C. Fire extinguisher cabinets.

D. Fire hose and hydrant cabinets.

E. Accessories.

F. Knox box Units

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpenry

B. Section 09 91 23 - Interior Painting

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

B. FM (AG) - FM Approval Guide; Current Edition.

C. NFPA 10 - Standard for Portable Fire Extinguishers; 2026.

D. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Detailed Product Data including all operational features particular to this Project.

C. Shop Drawings: Detailed and scaled including all cabinet locations and dimensions.

D. Manufacturer's Installation Instructions: Thoroughly detailed and coordinated to this particular Project including any necessary special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test, refill, recharge schedules and all re-certification requirements.

1.05 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Activar Construction Products Group, Inc. - JL Industries; Cosmic Extinguisher - Multipurpose Chemical: www.activarcpg.com.
   2. Kidde, a unit of United Technologies Corp: www.kidde.com.
   3. Oval Brand Fire Products; Oval Dry Chemical Fire Extinguisher - Multipurpose ABC: www.ovalfireproducts.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Fire Extinguisher Cabinets and Accessories:
   1. JL Industries, Inc.
   2. Larsen's Manufacturing Co: www.larsensmfg.com.
   3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Fire Hose and Hydrant Cabinets and Accessories:
   1. Safety One; Hose & Hydrant Storage Series: www.safetyone.com.

2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.

B. Water Type Fire Extinguishers: Stainless steel tank, pressurized, with premixed antifreeze solution, including hose and nozzle.
   1. Class: 2-A type.
   2. Finish: Polished chrome.
   3. Temperature Range: Minus (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

C. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Cartridge Operated: Spun shell.
   2. Stored Pressure Operated: Deep Drawn.
   3. Class: A:B:C type.
   4. Size: 5 pound.
   5. Finish: Baked polyester powder coat, red color.
   6. Temperature range: Minus (65) sixty five degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

D. FFFP - Foam Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: A:B type.
   2. Size and classification as scheduled.
   3. Finish: Polished stainless steel.
   4. Temperature range: Minum (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

E. Carbon Dioxide Type Fire Extinguishers: Aluminum tank, with pressure gauge.
   1. Class: B:C type.
   2. Size and classification as scheduled.
   3. Finish: Baked enamel, color as selected.
   4. Temperature range: Minus (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

F. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: K type.
   2. Size: 1.6 gallons.
   3. Size and classification as scheduled.
   4. Finish: Polished stainless steel.
   5. Temperature range: Minus (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

G. FE-36 Clean Agent Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: A:B:C type.
   2. Size: 2.5 pound.
   3. Size and classification as scheduled.
   4. Finish: Baked polyester powder coat.
   5. Temperature Range: Minus (40) Forty degrees fahrenheit to (120) One Hundred Twenty degrees fahrenheit.

2.03 SELF SERVICE, RELOADABLE FIRE EXTINGUISHERS

A. Self-Service Reloadable Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.
2. Self Service Features:
    a. Special license or certification not necessary for required monthly and annual inspections.
    b. Pending direction from those Local Authorities having Jurisdiction (AHJ), special license or certification may be required to service, reload units.
    c. Reloadable on site with extinguisher agent and carbon dioxide cartridges.

B. Multipurpose Monoammonium Phosphate Dry Chemical Type Fire Extinguishers: Polymeric body, including discharge head, carbon dioxide cartridge, extinguisher agent cartridge and valve assembly.
1. Pressurization: Non pressurized until pressurized by carbon dioxide cartridge activation.
2. Class: 3A:40B:C type.
3. Size: 5 pound.
4. Size and classification as scheduled.
5. Finish: Manufacturer's standard finish with adhered instruction labels.
6. Temperature range: Minus (40) Forty degrees fahrenheit to (120) One Hundred Twenty degrees fahrenheit.

2.04 FIRE EXTINGUISHER CABINETS

A. Basis of Design: Larsen's Manufacturing Co.Aluminium with clear satin anodized finish.
1. Verticle duo with clear acrylic glazing and verticle red letters.
2. Semi recessed aluminum cabinets located within gypsum board and metal stud partitions. Notify Architect and Fire Marshall when metal stud framing is in place for locating cabinets. Model numbers shall be determined by wall thickness and locations determined by Fire Marshal.
3. Fully recessed aluminum cabinets, set to partitions, as delineated within Contract Documents.

B. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.

C. Cabinet Construction: Non fire rated.
1. Formed primed steel sheet; 0.036 inch thick base metal.
2. Formed aluminum: 0.128 inch thick base material.

D. Fire Rated Cabinet Construction: One-hour fire rated.
1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.

E. Cabinet Configuration: Semi-recessed type.
1. Size to accommodate accessories.
2. Exterior nominal dimensions of as indicated on drawings.
3. Trimless type.
4. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.

F. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.

G. Door Glazing: Float glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.

H. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.

I. Cabinet Mounting Hardware: Appropriate to cabinet, with pre drilled holes for placement of anchors.

J. Fabrication: Weld, fill, and grind components smooth.

K. Finish, Cabinet, Trim and Door: As selected by Architect from Manufacturer's full range of options.

L. Finish of Cabinet Interior: White colored enamel.

2.05 ACCESSORIES

A. Fire Blanket: Fire proof wool; red, (120) One Hundred Twenty inches square.

2.06 KNOX BOX

A. (2) Two Fully recessed type, locations as directed by Architect, including lift off type door, with UL listed tamper switches. 1/4" plate steel housing. 1/2" thick steel door with interior gasket seal. Box and lock shall be UL listed. Lock shall include1/8" thick stainless steel dust cover with tamper seal mounting.
   1. Exterior Dimensions: 8"H x 8"W x 3 3/4"D.
   2. Recessed Mount Flange: per Manufacturer.
   3. Lock: UL listed, double action rotating tumblers and hardened steel pins accessed by a biased cut key.
   4. Finish: As selected by Architect from Manufacturer's full range of options.
   5. Color: As selected by Architect from Manufacturer's full range of options.
   6. P/N: 3200 Series Knox Box.
   7. Manufacturer: Knox Company; www.knoxbox.com.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** existing conditions prior to beginnng Work, this Section

B. **Coordinate, confirm all** rough openings are correctly sized, located, prior to starting Work, this Section.

3.02 INSTALLATION

A. Install all Work this Section, in full accordance with Manufacturer's written instructions.

3.03 MAINTENANCE, SELF SERVICE FIRE EXTINGUISHERS

A. Monthly Inspections: Inspect all fire extinguishers in full accordance with Manufacturer’s instructions and all requirements of those Local Authorities having Jurisdiction.

B. Annual Inspections: Inspect all self service fire extinguishers in full accordance with Manufacturer’s instructions, and all requirements of those Local Authorities having Jurisdiction.

C. Inspection Certification Tag: Provide new tag, indicating acceptable condition of fire extinguisher, date of inspection, and name of inspector, for each inspection.

END OF SECTION

SECTION 10 51 13
METAL LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal lockers.

B. Locker benches.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpentry.

B. Section 06 20 00 - Finish Carpentry.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2025a.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2022.

E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2024.

F. ASTM F1267 - Standard Specification for Metal, Expanded, Steel; 2018 (Reapproved 2023).

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's thoroughly detailed data, particular to this Project, re: ocker construction, sizes, and accessories.
   1. Wired Access Control: Include all power requirements and wiring diagrams, all Products delineated within Contract Documents.

C. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.

D. Product Sample: Two (2) Product Samples, Manufacturer's standard sized, as required to accurately represent construction, color, finish, sheen, hardware and accessories.

E. Manufacturer's written Installation Instructions: Thoroughly indicate all component installation assembly.

1.05 DELIVERY, STORAGE, HANDLING

A. Protect all Work, this Secton, from damage

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Lockers:
   1. Art Metal Products: www.artmetalproducts.com.
   2. ASI Storage Solutions: www.asi-storage.com.
   3. Penco Products, Inc. www.pencoproducts.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content..

2.02 METAL LOCKERS

A. Accessibility: Design all units, as required to fully compl wiht accessabilty standards and those Local Authorities having Jurisdiction.

B. Locker Case Construction:
   1. Heavy Duty Welded Construction: Made of formed, welded together sheet steel; metal edges finished smooth without burrs, powder coated finish, all surfaces.
      a. Assembly: Do not use bolts, screws, or rivets within Locker assembly.
      b. Locker Body Components: Formed and flanged from steel sheet of the following type and minimum thicknesses:
         1) Unperforated Steel Sheet: Commercial Steel (CS), Type B, supplied for exposed applications and complying with ASTM A1008/A1008M and the following:
            (a) Uncoated.
            (b) Zinc Coated by the Hot-Dip Process: Comply with ASTM A653/A653M, coating designation G60/Z180.
            (c) Zinc Iron Alloy Coated by the Hot Dip Process: Fully comply with ASTM A653/A653M, coating designation A40/ZF120.
            (d) Zinc-Coated by the Electrolytic Process: Comply with ASTM A879/A879M, coating designation 30Z.
            (e) Perforations: Manufacturer's standard pattern of square holes.
         2) Expanded Steel Sheet: Made from ASTM A1008/A1008M carbon steel sheet and fully complying with ASTM F1267, Type II, expanded and flattened, style 3/4 - 16, with a minimum 70 percent open area.
            (a) Class 1, uncoated.
            (b) Class 2, hot dip zinc-coated, galvanized or galvannealed.
         3) Body and Shelves: 16 gauge, 0.0598 inch.
         4) Backs: 18 gauge, 0.0478 inch.
         5) Base: 18 gauge, 0.0478 inch.
            (a) Height: 4 inches.
         6) Legs: Manufacturer's standard
            (a) Form by extending frame members.
            (b) Fabricate from 14 gauge, 0.0747 inch nominal thickness steel sheet specified above, welded to bottom of locker.
            (c) Height: 6 inches.
      c. Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.
         1) Door Frame: 16 gauge, 0.0598 inch, minimum.
      d. Where ends or sides are exposed, provide flush panel closures.
      e. Provide filler strips where indicated or required, securely attached to lockers.

C. Drawer Base with Bench:
   1. Top, Bottom, Sides, Back, and Drawer: 16 gauge, 0.0598 inch sheet steel.
   2. Slides: Steel, full extension arms, ball bearings; self-closing; capacity as recommended by manufacturer for drawer height and width.
   3. Integral self latching mechanism triggered by operation of wardrobe door.
   4. Bench: Mixed hardwood.

D. Doors: Channel edge; welded construction, manufacturer's standard stiffeners, grind and finish edges smooth.
   1. Door Thickness: 16 gauge, 0.0598 inch, minimum.
   2. Form recess for operating handle and locking device.

E. Latches and Door Handles: Manufacturer's standard.
   1. Latching Components: 300 Series Stainless Steel (ASTM A240/A240M).
   2. Latching: Manufacturer's standard for locking arrangement selected.
      a. Three Point Lift Handle Gravity Latch: Pocket-mounted, provide for doors 18 inches or taller.
         1) Handle Pocket, Recess: Stainless steel flush-mounted cup recessed into face of door.

2) Handle: Steel finger lift mechanism with exposed portion encased in molded plastic trigger.
   (a) Padlock Eye: Integral with lift trigger, sized for use with 9/32 inch diameter padlock shackles.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** prepared bases are in correct position and configuration.

B. **Confirm all** bases and embedded anchors are properly sized.

C. **Verify all** power and ethernet are installed and enabled. See Manufacturer drawings for recommended outlet or junction box placement.

3.02 INSTALLATION

A. Install all Products in full accordance with Manufacturer's written instructions.

B. Place and secure on prepared base.

C. Install all lockers plumb and square.

D. Secure lockers with anchor devices, as required to suit substrate materials, this particular Project. Minimum Pullout Force: (150) One Hundred Fifty pounds.

E. Bolt all adjoining locker units together, as required to provide rigid installation.

F. Install all end panels, filler panels, and sloped tops.

G. Install all fittings not factory installed.

H. Replace all components that do not operate smoothly.

3.03 CLEANING, PROTECTION

A. **Thoroughly clean all Work, this Section.**

B. **Protect all Work, this Section, from damage.**

C. **Replace all damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 12 24 00
WINDOW SHADES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior Motorized Window Shades.

B. Interior Manually Operated Window shades.

1.02 RELATED REQUIREMENTS

A. Reference Section 06 10 53 - Miscellaneous Rough Carpentty for additional Content

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

B. C2C (DIR) - C2C Certified Products Registry; Cradle to Cradle Products Innovation Institute; Current Edition.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2023, with Errata.

E. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

F. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

G. WCMA A100.1 - Standard for Safety of Window Covering Products; 2022.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Wherever motorized shades are scheduled to be controlled by control systems, provided under other Sections, coordinate said Work with appropriate Trades, as required to provide compatible Products, complete installation, this particular Project.
   2. Fully coordinate Work with all other Trades, as required to provide rough in of electrical wiring, for installation of all hard wired, motorized shades.
   3. Wherever motorized shades are scheduled, **provide only plenum rated cable**, all motor control wiring.

B. Preinstallation Meeting: Convene (14) Fourteen calendar days prior to begining any Work, this Section.

C. Sequencing:
   1. **Do not** fabricate any Work, this Section, until all feld dimensions have been verified, coordinated accordingly.
   2. **Do not** install any Work, this Section, until all final surface finishes have been completed.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide Manufacturer's thoroughly detailed catalog pages, data sheets, including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories, particular to this Project.
   1. Motorized Shades: Include all power requirements, thoroughly detailed wiring diagrams, all Products, particular to this Project.

C. Shop Drawings: Include thoroughly detailed shade schedule, details, mounting dimensions and operation direction, all Work, this Section, particular to this Project.

1. Motorized Shades: Provide thoroughly schematic system riser diagram indicating component interconnections. Include requirements for interface with all other systems, particular to this Project.

D. Certificates: Manufacturer's thoroughly detailed written documentation, confirmation that all line voltage components are UL listed.

E. Source Quality Control Submittals: Provide Test Reports verifying compliance with all specified fabric properties, this particular Project.

F. Product Samples: Provide (2) Two Product Samples, Manufacturer's standard size, each Product delineated within Contract Documents, as required to accurately represent , construction, color, sheen and pattern.

G. Manufacturer's Instructions: Include Manufacturer's detailed written instructions for storage, handling, protection, examination, preparation, and installation of all Work, this Section.

H. Project Record Documents: Record actual locations of control systems, this particular Project, show all interconnecting wiring.

I. Operation and Maintenance Data: List of all components with part numbers, sources of supply, operation, copy of Shop Drawings and all maintenance instructions.

J. Warranty: Manufacturer's (15) Fifteen Year Warranty, completed within Owner's name and registered with said Manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Work, this Section, minimum (15) Fifteen Years documented experience.

B. Installer Qualifications: Company specializing in Work, this Section, minimum (15) Fifteen Years documented experience.
1. Manufacturer's Authorized representative.
2. Factory training, demonstrated experience.

C. Product Listing Organization Qualifications: Organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to Owner, those Local Aauthorities having Jurisdiction.

1.07 MOCK UP

A. Mock Up: Provide, install full sized mock up, Work this Section, complete with previously selected shade fabric including example of seams and batten pockets.
1. Obtain Architect's review, approval of light, privacy characteristics, fabric prior to fabrication.
2. Full sized mock up will become the property of Owner.
3. **Mock Up may not remain as portion of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver all shades within Manufacturer's unopened packaging, labeled, as required to identify each shade, each opening.

B. Handle and store all shades in full accordance with Manufacturer's recommendations.

1.09 FIELD CONDITIONS

A. **Do not** install any Work, this Section, under any environmental conditions outside Manufacturer's limits.

1.10 WARRANTY

A. Provide Manufacturer's Warranty fully covering following:
1. Shade Hardware: (15) Fifteen Years.
2. Electric Motors: (10) Ten Years.
3. Electronic Control Equipment: (10) Ten Years.
4. Fabric: (15) Fifteen Years.

5. Aluminum and Steel Coatings: (15) Fifteen Years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Interior Manually Operated Window Shades: "As delineated within Contract Documents".
   1. Draper, Inc; Clutch Operated FlexShade: www.draperinc.com.
   2. Hunter Douglas Architectural; RB500 Manual Roller Shades: www.hunterdouglasarchitectural.com.
   3. Levolor: www.commercial.levolor.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 ROLLER SHADES

A. General:
   1. Provide shade system components that are easy to remove, adjust without removal of mounted shade brackets.
   2. Provide shade system that operates smoothly.
   3. Provide shade system that is fully certified, listed within C2C (DIR).
   4. Interior Motorized Window Shades: "As delineated within Contract Documents" Motor system housed inside roller tube, controlling shade movement via motor controls indicated; listed or recognized to UL 325.
      a. Fully comply with NFPA 70.
      b. Electrical Components: Listed, classified, and labeled as suitable for the purpose intended. All system components shall be FCC compliant.
      c. Motors: Size and configuration as recommended by Manufacturer for the type, size, and arrangement, particular to this Project.
      d. Audible Noise: Measured (2) Two Feet from unit, with no audible clicks, with motor in operation.

B. Window Shades:
   1. Basis of Design: (Mecho Shade Systems; www.mechoshade.com).
   2. Description - Interior Window Shades: Single roller, manually operated fabric window shade system complete with mounting brackets, roller tubes, hembars, hardware and accessories, particular to this Project.
      a. Drop Position: Regular roll.
      b. Roll Direction: Bottom up, closed position, top of window opening.
      c. Size: As delineated within Contract Documents.
      d. Fabric: As selected by Architect from Manufacturer's full line of options.
   3. Brackets, Mounting Hardware: As recommended by Manufacturer for mounting indicated and as required to accommodate shade fabric size, weight, this particular Project.
      a. Material: Stamped steel.
   4. Roller Tubes: As required for type of shade operation.
      a. Material: Extruded aluminum, finish as selected by Architect from Manufacturer's full line of options.
      b. Size: As recommended by Manufacturer; selected for suitability, installation conditions, span, and weight of shades, this particular Project.
      c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.
      d. Take Up Roller: Manufacturer's standard roller tube pretensioned for winding lift cable.
   5. Hembars: Designed to maintain bottom of shade straight and flat.
      a. Style: Exposed aluminum bottom bar, flat profile with closed ends; finish as selected by Architect from Manufacturer's full range of options.
      b. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.
   6. Manual Operation for Interior Shades:

a. Clutch Operator: Manufacturer's standard, this particular Project, permanently lubricated.
b. Drive Chain: Continuous loop, beaded ball chain with restraining device, (115) One Hundred Fifteen pound minimum breaking strength; fully comply with WCMA A100.1. Provide upper and lower limit stops.
c. Shade Lift Assistance: Manufacturer's standard device, particular to this Project, contained within idler end of roller tube, as required to reduce force required to lift shades; based on shade weight.
d. Chain Retainer:
    1) Chain tensioning device fully complying with WCMA A100.1.
    2) Manufacturer's clip, particular to this Project.

2.03 SHADE FABRIC

A. Fabric: Nonflammable, color fast, impervious to heat, moisture and able to fully retain shape under normal operation.
1. Manufacturers:
    a. Shade fabric as delineated within Contract Documents.
    b. MechoShade Systems L.L.C.: www.mechoshade.com.
    c. Mermet Corporation: www.mermetusa.com.
    d. Phifer, Inc.: www.phifer.com.
    e. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
2. Material Certificates and Product Disclosures:
    a. Low Emitting Material Certification: Greenguard Gold certified and listed in UL (GGG).
    b. Material Health Certificate: Achievement level of Bronze.
    c. Health Product Declaration (HPD): Complete, published declaration with full disclosure of known hazards.
    d. Declare label.
3. Performance Requirements:
    a. Flammability: Pass NFPA 701.
    b. Fungal Resistance: No growth when tested according to ASTM G21.
    c. Solar Transmittance:
    d. Visible Light Transmittance:
    e. Solar Absorption:
    f. Solar Reflectance:
4. Color: As selected by Architect from Manufacturer’s full range of options.
5. Fabrication:
    a. Fabric Orientation: Railroaded, fabric turned 90 degrees off roll.
    b. If height of opening requires multiple panels of railroaded fabric, use battens at seams.
    c. Battens: Full width of shade, enclose within welded shade fabric pocket.

2.04 ROLLER SHADE FABRICATION

A. Field measure all finished openings prior to ordering, fabrication.

B. Dimensional Tolerances: Fabricate shades to fit openings, this particular Project.
1. Vertical Dimensions: Fill openings from head to sill with 1/4 inch space between bottom bar and window sill.
2. Horizontal Dimensions, Inside Mounting: Fill openings from jamb to jamb.

C. Dimensional Tolerances: As recommended in writing by Manufacturer, this particular Project.

D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints centered upon window mullion centers; butt rollers end to end.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Examine all** finished openings for any deficiencies that may preclude satisfactory installation.

B. If substrate preparation is the responsibility of another installer, notify Architect, immediately of any unsatisfactory preparation, prior to beginning any Work, this Section.

C. **Start of installation shall represent acceptance of all substrates.**

3.02 PREPARATION

A. **Prepare all surfaces** using only those methods recommended, in writing, by Manufacturer for achieving best results, this particular Project.

B. **Fully coordinate** with window installation, placement of all concealed blocking, as required to adequately support shades.

3.03 INSTALLATION

A. Install in full accordance with Manufacturer's instructions and previously approved shop drawings, **using only** those mounting devices as indicated.

B. **Replace all** shades that exceed any tolerances delineated within Contract Documents.

C. Adjust level, all shades centering from mounting bracket. **Verify no** telescoping of shade fabric. Ensure smooth shade operation.

3.04 SYSTEM START UP

A. Motorized Shade Systems: Provide services of a Manufacturer's authorized representative to perform system startup.

3.05 CLEANING

A. **Thoroughly clean** all Work, this Section.

B. **Replace all** Work, this Section, that cannot be cleaned to "like new" condition.

3.06 CLOSEOUT ACTIVITIES

A. Reference Section 01 78 00 - Closeout Submitttals for additional Content.

B. Demonstration: Demonstrate operation, maintenance, all Work, this Section, for Owner's Representatives.

C. Training: Thoroughly train Owner's Representates, operation and maintenance, all Work, this Section.

1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required, this particular Project.
2. Provide minimum (90) Ninety minutes of training by Manufacturer's authorized personnel, date and time as directed by Owner's Represntatives.

3.07 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

E. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.

F. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

G. NSI (DSDM) - Dimensional Stone Design Manual, Version VIII; 2016.

H. PS 1 - Structural Plywood; 2023.

1.03 SUBMITTALS

A. ReferenceSection 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

C. Shop Drawings: Provide thoroughly detailed Submittal, particular to this Project.

D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.

E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

F. Installation Instructions: Manufacturer's installation instructions and recommendations.

G. Maintenance Data: Manufacturer's detailed written instructions, recommendations for maintenance, repair of countertop surfaces.

1.04 DELIVERY, STORAGE, HANDLING

A. Store all Products within Manufacturer's unopened packaging, until ready for installation.

B. Store and dispose of all solvent based materials, any materials used with solvent based materials, in full accordance with those requirements of Local Authorities having Jurisdiction.

1.05 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. **Do not** install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in full accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless directed otherwise by Architect.

B. Natural Quartz and Resin Composite Countertops: Sheet or slab of natural quartz and plastic resin over continuous substrate.

1. Flat Sheet Thickness: 1-1/4 inch, minimum.
2. Natural Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISFA 3-01 and NEMA LD 3; orthophthalic polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard stone fabrication tools; no surface coating; color and pattern consistent throughout thickness.
    a. Manufacturers:
        1) As outlined within Contract Documents.
        2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
    b. Factory fabricate all components to greatest extent practical, within those sizes, shapes indicated; fully comply with NSI (DSDM).
    c. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in full accordance with ASTM E84.
    d. Finish on Exposed Surfaces: As directed by Architect.
    e. Color and Pattern: As selected by Architect from Manufacturer's entire range of options.
3. All other Components Thickness: 3/4 inch, minimum.
4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
5. Skirts: As delineated within Contract Documents.

2.02 MATERIALS

A. Extruded Aluminum: ASTM B211/B211M, 6463 alloy, T5 temper.

B. Plywood for Supporting Substrate: PS 1 Exterior Grade, "A C" veneer grade, minimum 5-ply; 3/4 inch thick; join lengths using metal splines.

C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 ACCESSORIES

A. Fixed Top Mounted Countertop Support Brackets:

2.04 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
    1. Join lengths of tops using best method recommended by manufacturer.
    2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
        a. Rout a 1/8 inch drip groove at underside of exposed overlapping edges, set back 1/2 inch from face of edge.
    3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back, end splash wherever counter edge abuts vertical surface, unless directed otherwise by Architect.
    1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
    2. Height: 4 inches, unless directed otherwise by Architect.

C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long within a single piece; join pieces with adhesive sealant in accordance with Manufacturer's recommendations and instructions.
    1. Integral sinks: Shop mount securely to countertop with adhesives, using flush configuration, as per manufacturer's instructions, and as detailed on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Do not** start any Work, this Section, until alll substrates have been properly prepared.

B. If substrate preparation is responsibility of another installer, notify Architect immediately, of any unsatisfactory preparation, before proceeding.

C. Verify all wall surfaces have been finished, mechanical, electrical and plumbing services have been properly placed, prior to commencing any Work of this Section..

3.02 PREPARATION

A. Thoroughly clean all surfaces, prior to beginning any Work, this Section.

B. Prepare all surfaces using only those methods recommended by Manufacturer for achieving best result for substrate, this particular Project.

3.03 INSTALLATION

A. Securely attach all countertops, using only concealed fasteners. Make all flat surfaces level; shim as required.

B. Seal tight all joints between back, end splashes, vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in (6) Six feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Thoroughly clean, all Work, this Section.

3.06 PROTECTION

A. **Protect all Work, this Section, from damage.**

B. **Replace all damaged Work, this Section, immediately.**

END OF SECTION

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