Kenaitze Indian Tribe
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KENAITZE INDIAN TRIBE
REQUEST FOR PROPOSAL
Tribal Courthouse Renovation and Addition Project
Issued: 01/06/2022

1 INTRODUCTION

1.1 ORGANIZATION

1.1.1. The Kenaitze Indian Tribe is a federally recognized tribal government, re-organized in 1971 under the statutes of the Indian Reorganization Act of 1934, as amended for Alaska in 1936. The Tribe serves over 5,000 community members, Alaska Natives, and American Indians in the central and upper Kenai Peninsula. The Tribe's Administration building is located at 150 N. Willow St. Kenai, Alaska 99611.

1.2. MISSION STATEMENT

1.2.1. To assure Kahtnuht'ana Dena'ina thrive forever.

2. OVERVIEW

The Kenaitze Indian Tribe (Tribe) is seeking a Contractor to construct and renovate the existing Tribal Court. The purpose of this Request for Proposal (RFP) is to solicit responses from competent and experienced Contractors that are capable of providing the goods/services as specified herein in a prompt, cost effective, and efficient manner per the plans and specifications accompanying this RFP.

3. INQUIRIES

Questions regarding this RFP must be directed in writing to Tami Murray, Procurement Manager, TMurray@kenaitze.org. All emails must identify the RFP title in the subject line, include the contact information for the person submitting the question, and indicate the relevant RFP, Plan Page, or Specification Division section number. **All questions must be submitted using this format and must be received no later than 5:00 p.m. (Alaska Standard Time) February 4, 2022. Responses will be posted on the Kenaitze website on or before close of business February 9, 2022 and emailed to inquiring parties.**

The Tribe will review the submitted questions and respond to all inquiries in writing by replying via our website or sending emails for all inquirers and interested Contractors at one time. The post will provide every question received and each accompanying response. This will ensure all potential Contractors receive the same information.

4. PROPOSAL SUBMISSION REQUIREMENTS

All Contractors interested in submitting a proposal in response to this RFP must adhere to the following requirements. Failure to do so may result in the Tribe deeming the proposal to be non-responsive and therefore not eligible for consideration.

4.1. Proposal Submittal Items

Contractors must only submit one proposal, follow the format outlined below, and clearly identify each of the following five criteria within the submittal.

a) **Cover Letter** – Submit a cover letter on company letterhead that is no more than 1 page and includes the following:

1. The company's legal name and contact information

2. An overview of the company's qualifications and experience relevant to the scope of work defined herein

3. The identity and qualifications of the person(s) whom will be assigned to the job should the vendor be chosen

4. The letter must be signed by an authorized company representative, and include that person's contact information.

b) **Scope of Work** – Submit a written, detailed description of how each subsection within section 5 Scope of Work will be accomplished. Please refrain from using marketing information in this part of the proposal submittal.

c) **Deliverables** – A baseline Project Schedule is required noting deliverables and milestones/due dates with the RFP. After contractor award, a detailed project schedule will be required noting all material order dates, lead times, delivery times, submission of submittals, red zone dates and detailed close out schedule. Depending on adequate ground thaw May 15, 2022 is the anticipated construction onsite startup date.

d) **Price** – Submit a written lump sum/fixed price proposal to provide the service(s) as specified herein, using the format set forth in Subsection 7.1 Proposal Price. The proposed price must include all of the vendor's costs associated with providing the good(s) or service(s) as called for within this RFP and including, but not limited to, wages, administrative overhead, travel, transportation, lodging, and other similar costs unless stated otherwise. No other costs will be considered for payment.

e) Pricing notes:

1. Due to unpredictable fuel prices, Kenaitze Indian Tribe acknowledges the cost of freight charges are volatile and will cover any increased freight cost at the time of shipment to the job site as long as an invoice from the shipper discloses all cost increases. However, no markup will be permitted on increased freight costs at the time of shipment except for payment and performance bond markup.

2. At the time of award, all material pricing and long lead items must be locked in immediately. There will be no change orders for price

increases or Covid related material shortages for failure to lock in pricing at the time of Award.

3. Contractor will have 10 days after award to lock in all pricing and will be noted in the detailed project schedule.

4. This is not a prevailing wage project.

f) If addendums are issued, they must be acknowledged, they can be found on the Kenaitze web site. https://www.kenaitze.org/about/procurement/

g) All proposals will become the property of the Tribe and may be returned only at the option of the Tribe. Any information marked as proprietary or confidential will be held in confidence to the greatest extent possible.

4.2. Proposal Submission Deadline

To be considered, a complete proposal package must be received by the Tribe by the deadline via either of the following methods:

a) Hand delivered or mailed to: Kenaitze Indian Tribe
Attention: Tami Murray
Procurement Manager
150 N. Willow St.
Kenai, Alaska 99611

b) Electronically transmitted to: TMurray@kenaitze.org

The deadline for RFP submission is **3:00 PM (Alaska Standard Time), February 17, 2022**. Any proposals received after the deadline may not be accepted. Proposals sent via email should be sent in a single PDF document format, with the RFP title noted in the subject line. **Notice of Award is anticipated on March 2, 2022.**

4.3 Proposal Preparation Cost

The Tribe shall not be responsible for any costs associated with preparing and/or submitting a proposal in response to this RFP, in any manner or for any reason.

4.4 Proposal Validity

A Contractor's price proposal will remain valid for 60 calendar days from the RFP submission deadline or until an award is made to the successful vendor, whichever is sooner. No price proposal will be accepted if marked "price prevailing at time of delivery", "estimated price", or something similar. All price proposals must be in US dollars.

4.5 Sovereign Immunity

The Tribe is reluctant to sign any contract or agreement that specifically asks or implies a waiver of sovereign immunity. If presented with a contract or agreement that contains or implies a waiver, the Tribe will likely ask that the following be included prior to consideration:

"*SOVEREIGN IMMUNITY: Kenaitze is a federally-recognized Indian tribe and, as such, possesses sovereign immunity from suit. By entering into this Agreement, the Tribe does not intend to waive its sovereign immunity and does not do so. Nothing in this*

Agreement shall be construed as a waiver of the sovereign immunity of the Tribe."

5. SCOPE OF WORK

The Tribal Court building requires the renovation and addition per the plans and specification accompanying this RFP.

5.1. Site Inspection

A recommended site inspection is encouraged prior to bidding this project to verify existing conditions and for Contractor to familiarize itself with the full scope of work. Contact Tami Murray, Procurement Manager to arrange an inspection, at 907-335-7213 or TMurray@kenaitze.org.

5.2 Please submit the following with all proposals:

a) A 5% Bid Bond is to accompany Contractor's lump sum bid made payable to Kenaitze Indian Tribe. Bid bonds will be held for 90 days.

b) A 10% Payment Bond and a 10% Performance bond is required.

c) The Contractor shall have, maintain, and provide proof of Commercial General Liability Insurance, Workman's Compensation Insurance, Auto Insurance, and Product Liability Insurance in addition to any applicable insurance required by the State of Alaska or the Contractor's primary state of location. The Contractor must provide the Tribe with proof of the insurance with the following coverage limits: **$1,000,000 Liability Insurance with an Umbrella Policy with a $2,000,000 aggregate.** The Contractor shall be financially responsible for all deductibles, costs, and self-insured retentions and/or self-insurance required herein.

5.3 Notice of Award Requirements

Upon Notice of Award and within 10 days Contractor shall submit the following to the Kenaitze Indian Tribe Project Manager:

a) Preconstruction Meeting Date
b) Detailed Project Schedule
c) Schedule of Values
d) Quality Control Plan with 3 phase Inspection Protocols
e) Site Specific Safety Requirements and Protocols
f) Construction Startup Submittals
g) Completed Vendor Packet that will accompany the Notice of Award

6. GENERAL REQUIREMENTS

6.1 Term of Service

The agreement resulting from this RFP shall be effective from the date of execution of the agreement through the completion of services. In no event shall services under the agreement extend beyond December 31, 2022. In the event the work is not completed

within this timeframe, the Tribe, in its sole opinion, may determine the Contractor to be in breach of the terms of the agreement.

6.2 RFP Modification
The Tribe reserves the right to:

a) Modify or otherwise alter any or all of the requirements herein. In the event of a modification, vendors will be given an equal opportunity to modify their proposals as identified in writing by the Tribe.

b) Reject any proposal not adhering to the requirements set forth within this RFP, either in whole or in part.

c) Reject any or all proposals received.

d) Terminate this RFP at any time, without reason.

6.3 Order of Precedence in the Event of a Conflict
If an agreement is awarded, all terms and conditions herein shall be incorporated into the award along with the Contractor's proposal. Any change to the agreement must be through a written amendment agreed upon by both Parties. In the event of a conflict between the RFP and the Contractor's proposal, the more stringent language shall apply.

6.4 Subcontracting
The Contractor must disclose to the Tribe the use and identity of all subcontractors it uses in carrying out the requirements herein. The Tribe reserves the right to approve all subcontractors if it so chooses. The Contractor is solely responsible for the satisfactory performance of and compensation to any and all subcontractors. All subcontractors are subject to the same terms and conditions as the contractor.

6.5 **Special Systems**
Contractor is required to utilize ATS/Contingent and ICD special systems vendors for project special systems. Quotes are incorporated with in the specifications with the possibility of adjustments prior to bid time. Contractor will review special systems vendor scope of work and cover any scope gaps not covered by the special system vendors.

6.6 Indemnification
Except in the case of the sole negligence or willful misconduct of the Tribe, the Contractor shall indemnify, defend and hold harmless the Tribe, and the Tribe's officers, agents, and employees from and against any and all liability, claims, damages, losses, expenses, actions, attorney fees and costs and lawsuits whatsoever (including without limitation all claims involving damage to real or personal property, civil rights claims, or claims of infringement of a patent, copyright, trade secret or trademark) caused by or arising out of the performance, acts, or omissions under this RFP by the Contractor or any of its officers, agents, representatives, employees or subcontractors or arising from or related to a failure to comply with the requirements herein, and/or applicable state or federal statute, law, regulation, or rule.

Nothing in this RFP is a waiver of Sovereign Immunity.

7. PRICE, PAYMENT, CHANGE ORDERS, AND RETAINAGE

7.1. Proposal Price

The Contractor must submit a written price proposal to provide the good(s) or service(s) as specified herein per plans and specifications along with any special provisions noted in the RFP. The proposed price must include all of the Contractor's costs associated with providing the good(s) or service(s) as called for within this RFP and including, but not limited to, wages, administrative overhead, travel, transportation, lodging, and other similar costs unless stated otherwise. No other costs will be considered for payment.

7.2. Payment

The Contractor shall be paid per the approved Schedule of Values for actual work completed in accordance with the requirements herein and the accepted Lump Sum/Fixed Price proposal. The total amount to be paid to the Contractor shall not exceed the Contractor's quoted amount, unless otherwise specifically agreed to in advance with supporting justification and in writing by both parties.

Payment to the Contractor is contingent on the Contractor's delivering a dated AIA G702 Application for Payment starting with PE No. 1 to the Tribe on a monthly basis. The Tribe retains the right to require additional documentation to support the submitted invoice. The Tribe will provide payment to the vendor within 30 calendar days of acceptance of the invoice

The Contractor shall provide the following information with each monthly invoice:

a) Identification of billing period

b) A statement describing the actual work completed with sufficient detail to reconcile the charges against the work performed and /or work product received by the Tribe (Schedule of Values)

c) Total cost billed for the billing period

d) A separate list of any Change Orders and the Amounts

e) Entity name and contact information

f) Name of authorized person originating or submitting the billing for the entity

7.3. Change Orders

a) Maximum subcontractor Change Order Percentage markup: 15%

b) Maximum Contractor Change Order Percentage markup: 10%

c) No markup on Bonding and Insurance Cost

7.4. Retainage

A 10% retainage shall be withheld from contractor's pay estimates until a 50% of project completion is acquired and then shall be reduced to a 5% retainage requirement, providing the Design Team, Owner, and governing jurisdiction has no issues with code compliance, contractor's means and methods of installation and construction quality.

8. FINAL DISPUTE RESOLUTION AND LIMITED WAIVER OF SOVEREIGN IMMUNITY

The Tribe's Standard Form of Agreement and Conditions (i.e. the Contract Documents) allow for Owner and Contractor claims to be resolved through a binding arbitration proceeding, with enforcement in a local Alaska Superior court having jurisdiction over the matter. These Contract Documents also provide a narrow waiver of the Tribe's sovereign immunity solely to resolve such disputes, as follows:

ARTICLE 17 FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

a) Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
2. Owner disputes with Contractor concerning the quality of the Work or other obligations under the Contract Documents.

b) Owner or Contractor may request arbitration of any Claim not resolved through informal discussions or other dispute resolution methods permitted under Article 12. The arbitration will be governed by the Construction Industry Arbitration Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for arbitration shall be submitted in writing to the American Arbitration Association, with copies provided to the other contracting party and the Engineer or Architect. The demand for arbitration will be made within the thirty (30) calendar day period specified in Article 12 as applicable, and in all other cases within ninety (90) calendar days after the Claim or counterclaim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such Claim, or other matter in question, would be barred by the applicable statute of limitations, provided however that Owner may pursue a Claim for latent or hidden Defective Work within three (3) years after discovery. The award rendered by the arbitrator shall be final and binding upon the Parties. Either party may seek enforcement of any final and binding arbitration decision, award or judgment in the Alaska Superior Court for the Third Judicial District located in Kenai, Alaska; provided that any decision, award or judgment against Owner is subject to all of the limitations set forth in this Article 17 and any other limitations on Claims, judgments or awards against Owner that may apply.

17.02 Additional Parties to any Dispute Resolution Procedure:

a) Except as provided below, no dispute resolution procedure permitted under the Contract Documents and arising out of or relating to the Agreement shall include by consolidation, joinder, or in any other manner any other person or entity (including the Architect or Engineer responsible for the Project's design, any Architect or Engineer Consultants and the officers, directors, agents, employees, or consultants of any of

them) who is not a party to this Contract, except at Owner's sole discretion.

b) Notwithstanding Paragraph 17.02.A, if a Claim, counterclaim, dispute, or other matter in question between Owner and Contractor involves the Work of a Subcontractor, Owner may, at its sole discretion, join such Subcontractor as a party to the dispute resolution procedure between Owner and Contractor. Contractor shall include in all subcontracts a specific provision whereby the Subcontractor consents to be joined in a dispute resolution procedure permitted under the Contract Documents between Owner and Contractor involving the Work of such Subcontractor. Nothing in this paragraph nor in the Contract Documents shall be construed to create any claim, right or cause of action in favor of Subcontractor against Owner, Architect, Engineer, or Architect or Engineer's Consultants.

17.03 Owner's Sovereign Immunity:

It is understood that Owner is a Federally Recognized Tribe which possesses sovereign immunity from suit.

a) Nothing in the Contract Documents shall be construed to be a waiver of sovereign immunity by Owner except to the limited extent necessary to permit Contractor to pursue a dispute resolution mechanism permitted under the Contract Documents or to seek judicial review to enforce any binding decision or award issued in accordance with such dispute resolution mechanisms. Sovereign immunity is waived solely to allow Contractor to pursue a Claim for payment for completed Work properly performed based on a properly and timely submitted application for payment, which has become due under the contract Documents and is unpaid. Sovereign immunity expressly is not waived as to any employee, Tribal Council member, or agent of Owner, and Owner hereby specifically reserves and retains its sovereign immunity, and all rights and privileges pertaining thereto except to the limited extent expressly stated in this Paragraph 17.02.

b) This limited waiver of sovereign immunity shall be deemed consent to the jurisdiction of the Alaska Superior Court for the Third Judicial District located in Kenai, Alaska, solely for the purpose of enforcement of a binding arbitration award or decision issued in accordance with the dispute resolution procedures contained herein.

c) A judgment or award against Owner made in accordance with the dispute resolution provisions of this Agreement may, pursuant to this limited waiver of immunity, be satisfied only from Owner's available funds expressly budgeted for this Project. Nothing in this limited waiver of immunity shall be construed as a waiver or consent to the levy of any judgment, lien, attachment or encumbrance upon any other funds, assets or income or any real property or interest in any real property of Owner, whether held in trust for the benefit of Owner by the United States, as restricted fee land or in fee simple.

d) This waiver of sovereign immunity specifically does not allow for recovery of attorney's fees or post-judgment interest and does not extend to actions for declaratory judgment or injunctive relief. Except as expressly provided herein, any award which increases the amount due Contractor above the Contract Price, or which extends the Contract beyond the Contract Times is hereby expressly conditioned upon the requirements of Article 11 of these Conditions. The parties hereby acknowledge and agree that this Paragraph 17.02 shall also apply to any other agreements entered into by the parties during the respective terms of such agreements, and shall, whenever any application of this Agreement continues beyond the termination of this Agreement, continue to

apply thereto, notwithstanding any prior termination of this Agreement.

9. EVALUATION AND SELECTION

Proposals will be evaluated by Tribal staff and committee based upon the responsiveness to the submission requirements described in Sections 4, and/or a point system with AN/AI and Tribal Member Preference, and/or any other manner deemed appropriate by the Tribe to determine the proposal most advantageous to the Tribe.

The Tribe reserves the right to waive informalities and minor inaccuracies and reject any and/or all proposals which it deems to be not in the best interests of the Tribe and to proceed with the next proposer or to utilize an entirely different process at any time during the process

Anticipated date for Notice of Award is March 2, 2022
Substantial Completion of the project by December 1, 2022

End of Proposal

Kenaitze Indian Tribe
TRIBAL COURTHOUSE

100% Technical Specifications Submittal

December 15, 2021

Prepared by:

Architects Alaska. Inc. 900 W. 5th Ave, Suite 403 Anchorage AK

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work by Owner.
5. Work under separate contracts.
6. Future work.
7. Purchase contracts.
8. Owner-furnished products.
9. Contractor-furnished, Owner-installed products.
10. Access to site.
11. Coordination with occupants.
12. Work restrictions.
13. Specification and Drawing conventions.
14. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: KIT Tribal Courthouse

1. Project Location: 508 Upland Ave. Kenai, AK

B. Owner: Kenaitze Indian Tribe 150 North Willow Street Kenai AK. 99611

1. Owner's Representative: Don Ohler

C. Architect: Architects Alaska 900 West 5th Ave. Ste. 403 Anchorage, AK 99501

D. Architect's Consultants: Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:
1. Civil Engineer: Nelson Engineers 155 Bidarka Street, Kenai, AK 99611
2. Structural: DCI Engineers 341 W. Tudor, Suite 105, Anchorage, AK
3. Mechanical and Electrical Engineers: HZA Engineering 113 W. Northern Lights Blvd, Suite 240, Anchorage, AK 99503

E. Contractor: TBD

F. Web-Based Project Software: Project software administered by Contractor will be used for purposes of managing communication and documents during the construction stage.

1. See Section 013100 "Project Management and Coordination." for requirements for **establishing**, **administering and** using web-based Project software.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

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

1. Renovation/expansion of existing Kenaitze Indian Tribe courthouse building. The building will be 5,872 s.f.after the expansion. This is type V-B Construction with typical 2x6 wood framed walls and R-21 batt insulation.

B. Type of Contract:

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

1.5 WORK BY OWNER

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

B. Subsequent Work: Owner will perform the following additional work at site after Substantial Completion. Completion of that work will depend on successful completion of preparatory Work under this Contract.

~~1.~~ ~~Special Systems to be completed by owner.~~ (*REV 1 Owner Comments 12-17-21)*

2. Furniture to be provided and installed by owner.

1.6 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products.

B. Owner-Furnished Products:

1. ~~Special systems~~ (*REV 1 Owner Comments 12-17-21)*

2. Furniture

3. Court Rooms - Display Cases are owner provided and installed. (*REV 1 Owner Comments 12-17-21)*

1.7 ACCESS TO SITE

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

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

C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.8 COORDINATION WITH OCCUPANTS

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

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.9 WORK RESTRICTIONS

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

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, unless otherwise indicated.

1. Weekend Hours: Allowed
2. Early Morning Hours: Contractor’s Discretion
3. Hours for Utility Shutdowns: Contractor’s Discretion
4. Hours for noisy activities (i.e. core drilling): Nothing after 7pm

C. Restricted Substances: Use of controlled substances on Project site is not permitted. Only smoking is allowed.

D. Employee Identification: Owner will provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

E. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

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

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

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

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

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

END OF SECTION 011000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.
2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
3. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

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

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

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

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1: Removal of unsatisfactory soil and replacement with satisfactory soil material.

1. Description: Unsatisfactory soil excavation and disposal off-site and replacement with satisfactory fill material or engineered fill from off-site, as required, according to Section 312000 "Earth Moving."
2. Unit of Measurement: Cubic yard (Cubic meter) of soil excavated, based on in-place surveys of volume before and after removal.

B. Unit Price No. 2: Rock excavation and replacement with satisfactory soil material.

1. Description: Classified rock excavation and disposal off-site and replacement with satisfactory fill material or engineered fill from off-site, as required, according to Section 312000 "Earth Moving."
2. Unit of Measurement: Cubic yard (Cubic meter) of rock excavated, based on survey of in-place surveys volume of before and after removal.

C. Unit Price No. 3: Cutting and patching of concrete slabs-on-grade.

1. Description: Cutting of new or existing concrete slabs-on-grade up to 6 inches (152 mm) thick, removal and excavation as required, and subsequent backfill, compaction, and patching of concrete according to Section 017300 "Execution." not otherwise indicated in the Contract Documents.
2. Unit of Measurement: Square feet (Square meters) of concrete removed.

D. Unit Price No. 4: Miscellaneous and structural steel.

1. Description: Miscellaneous lintels and other supports not otherwise indicated in the Contract Documents, according to Section 051200 "Structural Steel Framing" and Section 055000 "Metal Fabrications."
2. Unit of Measurement: Cost in place of pounds (kilograms) of fabricated steel as indicated on itemized invoice of steel supplier.

END OF SECTION 012200

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on form included in Project Manual.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on form included in Project Manual.

B. Contractor’s self-performed work for Overhead and Profit shall not exceed a 15% markup. Subcontractor’s markup up for self-performed to includes any sub-tier contractors or subcontractors, shall not exceed 15% for Overhead and Profit. General Contractor’s mark up on subcontractor’s work shall not exceed 10% for Overhead and Profit. No markup is permitted on Change Orders for Bonding and Insurances.

C. Under no circumstances shall the contractor stop work or delay the project due to disagreements on change order cost or pricing.

D. Owner reserves the right to initiate Change Order Scope of Work on a Time and Material basis. (*REV 1 Owner Comments 12-17-21)*

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on form included in Project Manual. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 WORK CHANGE DIRECTIVE

A. Work Change Directive: Architect may issue a Work Change Directive on EJCDC Document C-940 form included in Project Manual. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 012600

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

1. Submit the schedule of values to Architect at earliest possible date, but no later than **seven** days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

    a. Project name and location.
    b. Name of Architect.
    c. Architect's Project number.
    d. Contractor's name and address.
    e. Date of submittal.

2. Arrange schedule of values consistent with format of **AIA Document G703**
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

    a. Related Specification Section or Division.
    b. Description of the Work.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that affect value.
    g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

        1) Labor.
        2) Materials.
        3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of **five** percent of the Contract Sum.

5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

   a. Differentiate between items stored on-site and items stored off-site.

6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

7. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.

8. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.

9. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling **five** percent of the Contract Sum and subcontract amount.

10. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the <**Insert day**> of the month. The period covered by each Application for Payment is one month, ending on the [**last day of the month**] <**Insert specific day of the month**>.

   1. Submit draft copy of Application for Payment **seven** days prior to due date for review by Architect.

D. Application for Payment Forms: Use **AIA Document G702 and AIA Document G703** as form for Applications for Payment.

   1. Other Application for Payment forms proposed by the Contractor shall be acceptable to **Architect** and Owner. Submit forms for approval with initial submittal of schedule of values.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit **three** signed and notarized original copies of each Application for Payment to **Architect** by a method ensuring receipt **within 24 hours**. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from **entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment**.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must be submitted within 5 days once the Notice of Intent to award has been issued:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Site specific safety plan
6. Stormwater Pollution Prevention Plan
7. Schedule of unit prices.
8. Submittal schedule (preliminary if not final).
9. List of Contractor's staff assignments.
10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.

14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. **Performance and payment bonds.**
17. Data needed to acquire Owner's insurance.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

Consult Owner about the need for additional affidavits and other requirements.

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.
5. AIA Document G706A.

Retain first subparagraph below if a surety is involved.

6. AIA Document G707.
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

END OF SECTION 012900

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GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Project meetings.

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

C. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
2. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
3. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
4. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.
5. Section 019113 "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.3 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within **15** days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, **in web-based Project software directory,** and in prominent location in **each** built facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

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

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

B. Coordination: Each contractor shall **cooperate with Project coordinator who shall** coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

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

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

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

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

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.

5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

    a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    b. Coordinate the addition of trade-specific information to coordination drawings **by multiple contractors** in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    f. Indicate required installation sequences.
    g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling, and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:

    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.

b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
c. Panel board, switch board, switchgear, transformer, busway, generator, and motor-control center locations.
d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that in general the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
2. File Preparation Format: **DWG**, Version 2019 operating in **Microsoft Windows** operating system.
3. File Submittal Format: Submit or post coordination drawing files using **PDF format**.
4. BIM File Incorporation: **Develop and incorporate** drawing files into BIM established for Project.

a. **Perform** three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect.

5. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
b. Digital Data Software Program: Drawings are available in Revit 2020
c. Contractor shall execute a data licensing agreement in the form of **AIA Document C106**

1.7 REQUEST FOR INFORMATION (RFI)

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

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

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

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

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

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in PDF format.

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

1. The following Contractor-generated RFIs will be returned without action:

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

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

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

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's BIM model will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in Revit 2020 or Autocad 2019
4. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement.

    a. Subcontractors, and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of AIA Document C106.
5. The following digital data files will be furnished for each appropriate discipline:

    a. Floor plans.
    b. Reflected ceiling plans.

B. Web-Based Project Software: Provide, administer, and use web-based Project software site for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Web-based Project software site includes, at a minimum, the following features:

    a. Compilation of Project data, including Contractor, subcontractors, Architect, architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
    b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
    c. Document workflow planning, allowing customization of workflow between project entities.

d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
e. Track status of each Project communication in real time, and log time and date when responses are provided.
f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
g. Processing and tracking of payment applications.
h. Processing and tracking of contract modifications.
i. Creating and distributing meeting minutes.
j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
k. Management of construction progress photographs.
l. Mobile device compatibility, including smartphones and tablets.

2. Provide up to seven web-based Project software user licenses for use of Owner, Owner's Commissioning Authority, Architect, and Architect's consultants. Provide eight hours of software training at Architect's office for web-based Project software users.
3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.
4. Provide one of the following web-based Project software packages under their current published licensing agreements:

a. Autodesk; [Buzzsaw] [Constructware].
b. Corecon Technologies, Inc.
c. Meridian Systems; Prolog.
d. Newforma, Inc.
e. Procore Technologies, Inc.
f. Viewpoint, Inc.; Viewpoint for Project Collaboration.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

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

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

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

a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Use of web-based Project software.
h. Procedures for processing field decisions and Change Orders.
i. Procedures for RFIs.
j. Procedures for testing and inspecting.
k. Procedures for processing Applications for Payment.
l. Distribution of the Contract Documents.
m. Submittal procedures.
n. ~~Sustainable design requirements.~~ (*REV 1 Owner Comments 12-17-21)*
o. Preparation of Record Documents.
p. Use of the premises.
q. Work restrictions.
r. Working hours.
s. Owner's occupancy requirements.
t. Responsibility for temporary facilities and controls.
u. Procedures for moisture and mold control.
v. Procedures for disruptions and shutdowns.
~~w.~~ ~~Construction waste management and recycling.~~ (*REV 1 Owner Comments 12-17-21)*
x. Parking availability.
y. Office, work, and storage areas.
z. Equipment deliveries and priorities.
aa. First aid.
bb. Security.
cc. Progress cleaning.

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

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and Owner's Commissioning Authority of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.

e. Purchases.
f. Deliveries.
g. Submittals.
h. ~~Sustainable design requirements~~ (*REV 1 Owner Comments 12-17-21)*
i. Review of mockups.
j. Possible conflicts.
k. Compatibility requirements.
l. Time schedules.
m. Weather limitations.
n. Manufacturer's written instructions.
o. Warranty requirements.
p. Compatibility of materials.
q. Acceptability of substrates.
r. Temporary facilities and controls.
s. Space and access limitations.
t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of Record Documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Procedures for completing and archiving web-based Project software site data files.
d. Submittal of written warranties.
e. ~~Requirements for completing sustainable design documentation.~~ (*REV 1 Owner Comments 12-17-21)*
f. Requirements for preparing operations and maintenance data.
g. Requirements for delivery of material samples, attic stock, and spare parts.
h. Requirements for demonstration and training.
i. Preparation of Contractor's punch list.
j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
k. Submittal procedures.

l. Coordination of separate contracts.
m. Owner's partial occupancy requirements.
n. Installation of Owner's furniture, fixtures, and equipment.
o. Responsibility for removing temporary facilities and controls.

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

E. Progress Meetings: **Conduct** progress meetings at **weekly** intervals.

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

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

1) Review schedule for next period.

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

1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
~~5) Status of sustainable design documentation.~~ (*REV 1 Owner Comments 12-17-21)*
6) Deliveries.
7) Off-site fabrication.
8) Access.
9) Site use.
10) Temporary facilities and controls.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) Status of RFIs.
16) Status of Proposal Requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

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

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

F. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

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

a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
c. Review present and future needs of each contractor present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
5) Deliveries.
6) Off-site fabrication.
7) Access.
8) Site use.
9) Temporary facilities and controls.
10) Work hours.
11) Hazards and risks.
12) Progress cleaning.
13) Quality and work standards.
14) Status of RFIs.
15) Proposal Requests.
16) Change Orders.
17) Pending changes.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

END OF SECTION 013100

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF file.
3. **Two** paper copies, of sufficient size to display entire period or schedule, as required.

B. Startup construction schedule.

1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: *Submit at daily intervals.* (*REV 1 Owner Comments 12-17-21)*

H. Material Location Reports: Submit at monthly intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Unusual Event Reports: Submit at time of unusual event.

K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including work stages, area separations, interim milestones and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, **list of subcontracts,** submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Use Microsoft Project, for current Windows operating system.

B. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: Owner may waive requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

C. Time Frame: Extend schedule from date established for commencement of the Work to date of [final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

D. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Commissioning Time: Include no fewer than 15 days for commissioning.
6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

E. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
6. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use-of-premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.

g. Deliveries.
h. Installation.
i. Tests and inspections.
j. Adjusting.
k. Curing.
l. Building flush-out.
m. Startup and placement into final use and operation.
n. Commissioning.

8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

a. Structural completion.
b. Temporary enclosure and space conditioning.
c. Permanent space enclosure.
d. Completion of mechanical installation.
e. Completion of electrical installation.
f. Substantial Completion.

F. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

G. "Cost Correlation" Paragraph below establishes progress measured in dollar volume of the Work.

H. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.

I. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

J. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

K. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

L. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for commencement of the Work.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for commencement of the Work.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.10 CPM SCHEDULE REQUIREMENTS

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for commencement of the Work. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for commencement of the Work.

a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing and inspection.
    j. Commissioning.
    k. Punch list and final completion.
    l. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents~~, sustainable design documents~~ and demonstration and training (if applicable), in the amount of **5** percent of the Contract Sum. (*REV 1 Owner Comments 12-17-21)*

    a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
    b. Total cost assigned to activities shall equal the total Contract Sum.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.

2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

    a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
    b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.11 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.

15. Change Orders received and implemented.
16. Change Directives received and implemented.
17. Services connected and disconnected.
18. Equipment or system tests and startups.
19. Partial completions and occupancies.
20. Substantial Completions authorized.

B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

END OF SECTION 013200

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Requirements:

1. Section 012100 "Allowances" for products selected under an allowance.
2. Section 012300 "Alternates" for products selected under an alternate.
3. Section 012500 "Substitution Procedures" for requests for substitutions.
4. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

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

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

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or

product from another named manufacturer that does meet the requirements of the specifications. Submit a comparable product request, if applicable.

1.4 ACTION SUBMITTALS

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

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a comparable product request. Architect will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

    a. Form of Architect's Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
    b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

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

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

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

    a. Name of product and manufacturer.
    b. Model and serial number.
    c. Capacity.
    d. Speed.
    e. Ratings.

3. See individual identification sections in Divisions 21, 22, 23, and 26 for additional identification requirements.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

B. Delivery and Handling:

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

C. Storage:

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

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
3. **Warranty dispute must occur in the jurisdiction where the products are installed.**

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

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.

3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

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

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Submit additional documentation required by Architect[**through Construction Manager**] in order to establish equivalency of proposed products. Evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: …"

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

    a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: …"

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience [**will**] [**will not**] be considered[**unless otherwise indicated**].

    a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: …"

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.

    a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: …"

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience [**will**] [**will not**] be considered[**unless otherwise indicated**].

    a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: …"

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.

    a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following: …"

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

    a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

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

2.2 COMPARABLE PRODUCTS

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

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

B. Submittal Requirements: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

END OF SECTION 016000

104416 fire extinguishers - 100%.d

GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
4. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.
5. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at **Project site**.

1. Prior to **commencing work requiring cutting and patching**, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and

patching work. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

a. Contractor's superintendent.
b. Trade supervisor responsible for cutting operations.
c. Trade supervisor(s) responsible for patching of each type of substrate.
d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affecting by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For **land surveyor**.

B. Certificates: Submit certificate signed by **land surveyor** certifying that location and elevation of improvements comply with requirements.

C. Cutting and Patching Plan: Submit plan describing procedures at least **10** days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

E. Certified Surveys: Submit **two** copies signed by **land surveyor**.

F. Final Property Survey: Submit **10** copies showing the Work performed and record survey data.

1.6 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. **Operational elements include the following:**

    a. Primary operational systems and equipment.
    b. Fire separation assemblies.
    c. Air or smoke barriers.
    d. Fire-suppression systems.
    e. Plumbing piping systems.
    f. Mechanical systems piping and ducts.
    g. Control systems.
    h. Communication systems.
    i. Fire-detection and -alarm systems.
    j. Conveying systems.
    k. Electrical wiring systems.
    l. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. **Other construction elements include but are not limited to the following:**

    a. Water, moisture, or vapor barriers.
    b. Membranes and flashings.
    c. Exterior curtain-wall construction.
    d. Sprayed fire-resistive material.
    e. Equipment supports.
    f. Piping, ductwork, vessels, and equipment.
    g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.
1. ~~For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.~~ (*REV 1 Owner Comments 12-17-21)*

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities,[**mechanical and electrical systems,**] and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to [**local utility**] [**Owner**] that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a **land surveyor** to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect].

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of **two** permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

E. Final Property Survey: Engage a [**land surveyor**] [**professional engineer**] to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by [**land surveyor**] [**professional engineer**], that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of **96 inches (2440 mm)** in occupied spaces and **90 inches (2300 mm)** in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

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

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to [**minimize**] [**prevent**] interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining

construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. **Concrete and Masonry**: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. ~~Comply with waste disposal requirements in [Section 015000 "Temporary Facilities and Controls."] [Section 017419 "Construction Waste Management and Disposal."]~~ (*REV 1 Owner Comments 12-17-21)*

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at final completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of **10**] days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.

6. ~~Submit sustainable design submittals not previously submitted.~~ (*REV 1 Owner Comments 12-17-21)*
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of **10** days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit final completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, **starting with exterior areas first and proceeding from lowest floor to highest floor**.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.

c. Name of Architect.
d. Name of Contractor.
e. Page number.

4. Submit list of incomplete items in the following format:
   a. PDF electronic file. Architect**,** will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within [**15**] <**Insert number**> days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit **by email to Architect**.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Wipe surfaces of mechanical and electrical equipment[**, elevator equipment,**] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

1) Clean HVAC system in compliance with [**NADCA ACR.**] [**Section 230130.52 "Existing HVAC Air-Distribution System Cleaning."**] Provide written report on completion of cleaning.

p. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
q. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect and Commissioning Authority will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit by email to Architect. Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.

1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's[and Commissioning Authority's] comments and prior to commencing demonstration and training.

E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, [loose-leaf] [post-type] binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Architect.
8. Name and contact information for Commissioning Authority.
9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:

1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.

5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

    a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.11 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

END OF SECTION 017823

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:
1. Section 017300 "Execution" for final property survey.
2. Section 017700 "Closeout Procedures" for general closeout procedures.
3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit **one** set of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit **one** paper-copy set of marked-up record prints.
2) Submit record digital data files and **one** of plots.
3) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:
1) Submit PDF electronic files of scanned record prints and **three** set(s) of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit **annotated PDF electronic files** of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit **annotated PDF electronic files and directories** of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit **annotated PDF electronic files and directories** of each submittal.

E. Reports: Submit written report **weekly** indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or [**Construction**] [**Work**] Change Directive.
    k. Changes made following Architect's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect **and Construction Manager**. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file **with comment function enabled**.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

    a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
    b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file **with comment function enabled**.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders[**, record Product Data,**] and record Drawings where applicable.

B. Format: Submit record Specifications as **annotated PDF electronic file**.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders[**, record Specifications,**] and record Drawings where applicable.

C. Format: Submit record Product Data as **annotated PDF electronic file**.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as **PDF electronic file**.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's[**and Construction Manager's**] reference during normal working hours.

END OF SECTION 017839

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

B. Allowances: Furnish demonstration and training instruction time under the demonstration and training allowance as specified in Section 012100 "Allowances."

C. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up. See requirements in Section 012200 "Unit Prices."

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For **facilitator**.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit **two** copies within **seven** days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.

b. Name and address of videographer.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Date of video recording.

2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
4. At completion of training, submit complete training manual(s) for Owner's use prepared in same [**paper**] [**and**] [**PDF file**] format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.7 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Systems and equipment operation manuals.
    c. Systems and equipment maintenance manuals.
    d. Product maintenance manuals.
    e. Project Record Documents.
    f. Identification systems.
    g. Warranties and bonds.
    h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.
    g. Instructions on stopping.
    h. Normal shutdown instructions.
    i. Operating procedures for emergencies.
    j. Operating procedures for system, subsystem, or equipment failure.
    k. Seasonal and weekend operating instructions.
    l. Required sequences for electric or electronic systems.
    m. Special operating instructions and procedures.

5. Adjustments: Include the following:

    a. Alignments.
    b. Checking adjustments.
    c. Noise and vibration adjustments.
    d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

    a. Diagnostic instructions.
    b. Test and inspection procedures.

7. Maintenance: Include the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of cleaning agents and methods of cleaning detrimental to product.
    d. Procedures for routine cleaning.
    e. Procedures for preventive maintenance.
    f. Procedures for routine maintenance.
    g. Instruction on use of special tools.

8. Repairs: Include the following:

    a. Diagnosis instructions.
    b. Repair instructions.
    c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    d. Instructions for identifying parts and components.
    e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner**, through Architect,** with at least **seven** days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of **an oral** performance-based test.

F. Cleanup: Collect used and leftover educational materials and **give to Owner**. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of **12** megapixels and capable of recording in full HD mode **with vibration reduction technology**.

1. Submit video recordings **on CD-ROM or thumb drive**.
2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:

    a. Name of Contractor/Installer.
    b. Business address.
    c. Business phone number.
    d. Point of contact.
    e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

    a. Produce segments to present a single significant piece of equipment per segment.
    b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
    c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by [**audio narration by microphone while**] [**dubbing audio narration off-site after**] video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 017900

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. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Owner of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: A demolition and disposal plan is required for any identified hazardous materials prior to the start of Work. Disposal of hazardous materials will be coordinated with the Kenai Peninsula Borough Landfill Operations Manager.
   1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

   1. Maintain fire-protection systems during selective demolition operations.

1.6 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

B. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

C. Survey of Existing Conditions: Record existing conditions by use of measured drawings or preconstruction photographs or video.

   1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
   2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off utilities with utility companies.
3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Removed and Reinstalled Items:

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

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

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

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PART1 GENERAL

1.01 DESCRIPTION

A. Work Included:

Cast in place concrete required for this project is shown in the Drawings and includes, but is not necessarily limited to footings, foundation walls, slabs on grade, floor slabs, concrete tanks, and concrete reinforcement.

B. Related Work Described Elsewhere:

1. Section 321313 Concrete Paving

1.02 QUALITY ASSURANCE

A. Codes and Standards:

In general, all concrete work on this Project shall comply with current American Concrete Institute Manuals of Concrete Practices. Comply with all applicable codes and regulations and pertinent portions of the following referenced standards and other standard publications referenced in subsequent articles, which shall become a part of these specifications to the extent of their applicability to the particular product, system, assembly, or item specified:

1. ACI 301: "Specifications for Structural Concrete for Buildings".

2. ACI 302: "Guide for Concrete Floor and Slab Construction."

3. ACI 304: "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete."

4. ACI 311: Recommended Practice for Concrete Inspection”.

5. ACI 315: "Manual of Standard Practice for Detailing Reinforced Concrete Structures."

6. ACI 318: "Building Code Requirements for Reinforced Concrete".

7. ACI 347: "Recommended Practice for Concrete Formwork".

B. Conflicts:

In the event of conflict or inconsistency between or among referenced standards and any provisions of this specification, or other Contract Documents, the most stringent requirement shall prevail, and shall be enforced.

C. Testing:

1. Conduct tests of the concrete during construction in accordance with ACI 301. Submit results of tests for approval. Remove and replace concrete which fails to achieve minimum 28 day compressive strength shown on the Drawings, at Contractor's expense.

2. Test all concrete for footings, slabs, walls, curbs and sidewalks.

3. Reject concrete which fails to meet specified criteria for slump, air content, and temperature.

D. Frequency of Testing:

1. Slump tests - ASTM C-143:
Perform one test for each set of compressive strength test specimens.

2. Air content - ASTM C-231:
Perform one test for each set of compressive strength test specimens.

3. Concrete temperature:
Test hourly when ambient air temperature is 40°F and below, and each time a set of compression test specimens are made.

4. Compression test specimen - ASTM C-31:
One set of three standard cylinders for each compressive strength test. Field cure.

5. Compressive strength tests - ASTM C-39:
Samples for strength tests for each class of concrete placed each day shall be taken not less than one a day nor less than once for each 20 cu. yd. of concrete, nor less than once for each 1,000 sq. ft. of surface area for slabs.

1.03 SUBMITTALS

Make all submittals in conformance with applicable section of these specifications. Conform with ACI 315 for nomenclature and conventions used in shop and placement drawings:

A. Concrete Materials:

Submit concrete design specification, laboratory test results, and materials list showing source and gradation of all aggregates, type and brand of Portland cement, admixtures source and quality of mixing water, and other aspects of the concrete design.

B. Reinforcing Steel:

Provide Materials Certificates signed by manufacturer and Contractor certifying that each material item complies with, or exceeds, specified requirements.

C. Admixtures:

Provide Materials Certificates signed by manufacturer and Contractor certifying that each material item complies with, or exceeds, specified requirements and that chloride content complies with specification requirements.

1.04 PRODUCT HANDLING

A. Delivery and Storage:

Do not permit delivery of any of the products of this section to the project site until proper facilities, away from traffic, are available for their proper storage and which will permit sorting and handling without endangering the materials themselves or materials for installations of other sections. Store all reinforcing steel on wood dunnage to keep it from direct contact with the ground surface.

B. Repairs & Replacements:

In the event of damage make all repairs and replacements necessary to restore to undamaged condition and do not proceed in those areas until all repairs have been made. Repairs and replacements shall be subject to approval of the Contracting Agency and shall be accomplished at no additional expense to the Owner.

1.05 PROJECT CONDITIONS

A. Protection Against Freezing:

Cover work with temporary or permanent cover as required to protect concrete against possibility of freezing during placement of concrete, and for at least 14 days after placement of concrete.

PART 2 PRODUCTS

2.01 FORMS

A. Material:

Provide new, except as permitted in PART 3 of this section for re-use:

1. Plywood:

U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill oiled and edge sealed, with each piece bearing legible grade mark of a recognized and approved inspection agency.

2. Dimensional lumber:

Him-Fir Number two grade, seasoned

B. Ties and Spreaders:

1. Provide type providing minimum working strength of 3,000 lbs. when fully assembled, which does not leave open holes through the concrete, and which permits neat and solid patching.

2. Metal shall not be closer than 3/4" to surface when forms are removed.

3. Do not use wire ties and wood spreaders.

C. Alternate Forming Systems:

Alternate systems will be considered upon submittal.

D. Coatings and Parting Compounds:

Provide commercial fabrication that will not bond with stain or adversely effect concrete surfaces and will not impair subsequent treatment of concrete surfaces to be cured with water or compounds conforming to FSTT-3-001657.

E. Joint Fillers:

Provide premolded, resilient, waterproof, compressible type with minimum 75% recovery conforming to FS HH-F- 341E, Type II; 1/2" thick for interior joints and 1/2" thick for exterior walks.

F. Tank Liner

1. Modified polyvinyl based terpolymer compound, white.

2. 65 mil thickness sidewalls, 80 mil thickness floor

3. Dielectrically welded seams.

4. Furnish with polypropylene padding.

5. Flexi-liner corporation (Tel. 1-800-423-4909) T-1 liner, or approved equal.

G. Other Materials:

Provide all other materials required for complete installation as selected by Contractor subject to the approval of the Contracting Agency.

2.02 REINFORCING

All concrete reinforcement shall be new, free from rust, and shall comply with the following reference standards:

A. Reinforcing Bars:

Provide ASTM A-615 grade 40 or 60 except where noted otherwise.

B. Wire:

Provide ASTM A-82 #16 double annealed iron wire.

C. Welded Wire Fabric:

Provide ASTM A-185 in Flat Sheets.

D. Accessories and Supports:

Provide supports, bolsters, chairs, spacers and other devices and accessories conforming to recommended Concrete Reinforcing Steel Institute (CRSI) practices. Provide galvanized accessories within 1-1/2" of surface of concrete with plastic tip chairs for exposed finish surfaces. Concrete dobie or other block, brick, or wood supports will not be permitted, except where specifically noted.

E. Welding Electrodes:

Conform to AWS Code D12.1.

F. Other Materials:

Provide all other materials, not specifically described but required for a complete and proper installation of concrete reinforcement, as selected by the Contractor, subject to the approval of the Contracting Agency.

2.03 CONCRETE

A. General:

Concrete mixes shall be designed to produce the tabulated properties below, and shall be subject to the approval of the Owner's Representative.

B. Quality:

1. Provide concrete having 3,000 psi minimum 28 day compressive strengths for footings, walls and slabs, unless noted otherwise in drawings.
2. Provide concrete with maximum aggregate of 3/4" for all concrete except concrete for exposed aggregate surfaces, which shall have a maximum aggregate size of 3/8".
3. Slump at placement shall conform to the following:

Location	Concrete Without Super Plasticizer	Concrete with Super Plasticizer
a. Slab on Grade	3 inches	6 to 9 inches
b. Footings, Walls, Slabs and Beams	4 inches	6 to 9 inches

4. Entrained air content at placement shall be 6% with 1.5% tolerance.

C. Cement:

Provide portland cement conforming to ASTM C-150, type I or II the product of a single manufacturer.

D. Aggregates:

1. Provide aggregates conforming to ASTM C-33, current edition, except as expressly permitted by the Contracting Agency.

2. Course aggregate size shall not exceed one-fifth the narrowest dimension between forms, one-third the depth of slabs, nor three-fourths the minimum clear spacing between individual bars or bundles of bars.

3. Fine aggregates shall be clean, sharp, natural sand, free from loam, clay, lumps, alkali, organic matter, or other deleterious substances.

4. Aggregates shall be well graded, clean, hard gravel and coarse sand, non-frost susceptible material, and free of vegetable matter and coatings of silt or clay. The gradations shall be determined by standard laboratory sieves with square openings. Material retained on a No. 4 screen shall be classified as coarse aggregate, which shall conform to the requirements of AASHTO M-80 and have the following limits of gradation:

COARSE AGGREGATE FOR PCC

Designated Sizes (AASHTO Gradation)	Percent by weight passing Laboratory Sieve having square openings in inches						
	2	1-1/2	1	¾	½	3/8	No.4
No.67 (3/4" to No.4)	..	..	100	90-100	..	20-55	0-10*

*Not more than 5% shall pass a No. 8 sieve.

All material passing a No. 4 sieve shall be classified as fine aggregate and shall conform to the requirements of AASHTO M-6 and have the following gradation:

FINE AGGREGATE FOR PCC

SIEVE SIZE	PERCENT PASSING SIEVE
Passing a 3/8 inch sieve	100
Passing a No. 4 inch sieve	95-100
Passing a No. 8 inch sieve	80-100
Passing a No. 16 inch sieve	45-80
Passing a No. 30 inch sieve	25-60
Passing a No. 50 inch sieve	10-30
Passing a No. 100 inch sieve	2-10

E. Water:

Provide mixing water from an approved source, clean, fresh, and free of acids, alkalis, oil, organic or other deleterious matter.

F. Miscellaneous Inserts:

Provide ASTM A-36 steel.

G. Air Entrainment:

Comply with ASTM C-260.

H. Water Reducing Admixture:

Comply with ASTM C-494.

I. Epoxy Grout:
Provide Master Builder's "Masterflow 713", Sonneborn "Ferrolith", or approved equal.

J. Joint Sealer:
Provide Grace "Daraweld-U Traffic Grade" or approved equal.

K. Other Materials:

Provide all other materials not specifically described but required for a complete and proper concrete installation, as selected by Contractor and subject to the approval of the Contracting Agency.

L. Calcium chloride additives are not permitted.

M. Latex - cement leveling compound - Laticrete 4237 or approved equal.
Provide a smooth trowel finish to accept finishes as scheduled.

N. Curing Compound:

Curing compounds are not allowed. All surfaces shall be water-cured.

O. Superplasticizers:

1. Meet ASTM C 494, Type F or G, of second or third generation type.

2. Do not use first generation superplasticizer

3. Hold slump to 6” or greater for 2 hours.

4. Second Generation Superplasticizer: Batch plant added to extend plasticity time up to 2-1/2 hours, control temperature of fresh concrete, reduce water 20 to 30 percent, and give higher strengths at all ages.

5. Third Generation Superplasticizer: Batch plant added to extend plasticity time up to 2-1/2 hours, maintain setting characteristics similar to normal concrete throughout its recommended dosage range and at varying concrete temperatures, reduce water to 30 to 40 percent, and give high-early and ultimate strengths.

6. Manufacturer and Product:
   a. Master Builders, Inc., Cleveland, OH, Rheobuild
   b. W.R. Grace & Co., Cambridge, MA, Darecem 100.

P. Synthetic Fiber Reinforcement for Concrete Slabs:

1. ‘Forte Fibre’ synthetic fiber. Add to mix at rates recommended by fiber manufacturer.

PART 3 EXECUTION

3.01 JOB CONDITIONS

A. Inspection:

Examine the surface of areas to which the concrete work is to be applied and determine that prior work complete, that all subgrades have been properly compacted, graded, that all slab cushions are in place, and that all previous work is complete and ready for erection of forms, setting of reinforcement, and placement of concrete.

B. Discrepancies:

In the event of discrepancy, ambiguity, interference, or any other unanticipated condition which might impede the timely execution of the work of this section, promptly notify the Contracting Agency and do not proceed in the area of discrepancy until all questions in regard thereto have been resolved.

C. Certificates:

Obtain written acknowledgment(s) from the subcontractors or installers of the formwork, reinforcement, and concrete placement that the substrates affecting their work have been examined and found satisfactory for subsequent operations. Such acknowledgments countersigned by the Contractor and delivered to the Contracting Agency prior to the final inspection, shall be a condition of the acceptance of the work of this section.

D. Admixtures:

Superplasticizers:

1. Add at concrete plant only through equipment furnished and/or approved by admixture manufacturer.

2. Equipment shall provide for easy and quick visual verification of admixture amount used for each dose.

3. Discharge amount to be added to each load of concrete into separate dispensing container, measured verified as to amount, then add to concrete.

4. Redosing of Concrete: Not permitted except when approved by inspection agency monitoring concrete quality and only after quality tests show this practice does not decrease the quality specified for concrete.

3.02 NOTICE

Notify the Owner's Representative at least 48 hours prior to beginning any pour of concrete, or 24 hours prior to closing any forms.

3.03 FORMWORK

A. Design:

Design forms to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure, so that they may be readily removed without impact, shock, or damage to in place concrete and adjacent materials.

B. Construction:

1. Construct forms to conform with ACI 347, to sizes, shapes, lines, and dimensions shown or as required to obtain accurate alignment, location, grades, and level and plumb work in finished structure. Forms shall be set straight, plumb and true to within 1/4" in 10' of length.

2. Provide for openings, offsets, recesses, linkages, keyways, moldings, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts and other features required to attain the required configuration.

3. Use materials selected to achieve the indicated finishes. Solidly butt joints and provide back up to prevent leakage of cement paste.

4. Fabricate for easy removal without hammering or prying against concrete surfaces. Provide crush plates where stripping might damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

5. Where interior area of formwork is inaccessible, provide temporary openings for cleanout, inspection prior to concrete placement, and for final placement. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

6. Chamfer exposed corners and edges as shown or required using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

C. Form Ties:

Use factory fabricated, adjustable length, removable or snap-off metal form ties, designed to prevent form deflection, and prevent spalling concrete surfaces upon removal. Position ties

so portion remaining within concrete after removal is at least 1-1/2" inside the concrete and which will not leave holes larger than 1" diameter in the concrete surface.

D. Coordination With Other Trades:

Provide necessary coordination with other trades to determine size and location of openings necessary for work of those trades. Accurately place and securely support items built into forms.

E. Cleaning & Tightening:

Thoroughly clean forms and adjacent surfaces receiving concrete. Remove chips, wood, sawdust, dirt, and other debris prior to placement of concrete. Retighten forms after concrete placement if required to eliminate mortar leaks.

3.04 PLACING REINFORCEMENT

A. General:

Comply with specified codes and standards and CRSI recommended placing practices for details and methods of placing reinforcement and supports.

B. Cleaning:

Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

C. Positioning:

1. Support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

2. Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold in position during concrete placement. Set wire ties so ends are directed into concrete, not toward exposed surfaces.

3. Do not place reinforcing bars more than 2" beyond the last leg of continuous bar support. Do not use supports as bases for runways for conveying equipment or similar construction loads.

D. Welded Wire Fabric:

1. Install welded wire fabric. Mats only. No rolled material will be acceptable. Lap adjoining mats a minimum of one and one half meshes and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps.

2. Support welded wire fabric with plastic chairs at intervals not exceeding 4 feet measured along both directions of the mesh. Support welded wire fabric to the middle of the slab thickness.

3. The practice of lifting the welded wire fabric off the subgrade as concrete is poured will be allowed only if after lifting the wire it is supported per Item D, 2 above.

3.05 JOINTS

A. Construction Joints:

Locate and install construction joints which are not shown on the drawings so as not to impair the strength and appearance of the structure, subject to the approval of the Contracting Agency.

Place construction joints perpendicular to the main reinforcement. Continue all reinforcement across construction joints.

B. Keyways:

Provide keyways at least 1-1/2" deep in all construction joints in walls, slabs, and between walls and footings; approved bulkheads designed for this purpose may be used for slabs.

C. Contraction Control Joints:

Construct preformed contraction control joints in slabs to form panels of patterns as shown on the drawings.

D. Expansion:.

1. Expansion joints:

Expansion joint material shall conform to the requirements at ASTM D-994 and AASHTO M-33. Expansion joint material shall extend the full width of the structure and shall be cut to such dimensions that the base of the expansion joint shall extend to the subgrade and the top shall be depressed not less than one-quarter (1/4) inch nor more than one-half (1/2) inch below the finished surface of the concrete.

The material shall be of one (1) piece in the vertical dimension and shall be securely fastened in a vertical position to the existing concrete face against which fresh concrete is to be poured. After the concrete has set, the expansion joints shall be filled

flush to the finish concrete surface with asphalt cement, two hundred (200) to three hundred (300) penetration. Application temperature of the sealing asphalt shall be between 250 degrees and 350 degrees Fahrenheit.

Sealing asphalt shall be applied by pouring from a bucket with a V-shaped spout, equipped with a positive shutoff to prevent spilling or dripping of asphalt. Before sealing, the joint shall be cleaned of all dirt, gravel, concrete mortar or other extraneous material. Sealing shall be done in a neat workmanlike manner. Sloppy work in sealing of expansion joints will not be tolerated.

3.06 EMBEDDED ITEMS

Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast in place concrete. Use approved setting drawings, diagrams, instructions, and directions provided by suppliers of the items to be attached thereto.

3.07 PREPARATION OF FORMS

Coat the contact surfaces of forms with an approved coating compound before placement of concrete, and according to manufacturer's instructions. Thin only with approved thinners according to manufacturer's recommendations. Do not permit application of excessive coating compound or allow it to accumulate in the forms or come into contact with concrete surfaces against which fresh concrete will be placed.

Coat steel forms with a non-staining, rust preventative form oil or otherwise protect against rusting. Rust stained steel formwork will not be acceptable and will be rejected.

3.08 CONCRETE PLACEMENT

A. Pre-placement Inspection:

Before placement of concrete, inspect the formwork and reinforcement and verify that all prior work has been completed to the point that placement of the concrete may be executed in complete conformance with the original design, the approved submittals and the referenced standards. Determine that all embedded items, supports, backing, and other provisions for items supported by or attached to the concrete have been provided for. Coordinate with other trades whose work will be affected by the operations of this section. Obtain all written acknowledgments specified in 3.01C above.

B. General:

Comply with ACI 304 and as herein specified. Deposit continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause formation of seams or planes of weakness within the section. If a section cannot be placed

continuously, provide construction joints as specified in 3.05. Deposit concrete as nearly as practicable to its final location to avoid segregation due to re-handling or flowing.

C. Footings and Walls:

1. Deposit in forms in horizontal layers not exceeding 24" in depth and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while previous layer is still plastic to avoid cold joints. Where vertical drop is more than three feet, elephant trunks shall be used.

3. Consolidate by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with the recommended practices of ACI 309 to suit type of concrete and project conditions.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate the placed layer and at least 6" into the previous layer. Do not insert vibrators into lower layers of concrete that have begun to set. Limit the duration of vibration to the time necessary to consolidate the concrete and complete embedment of reinforcement and other embedded items without causing segregation of the mix.

D. Slabs:

1. Deposit and consolidate in a continuous operation within the limits of construction joints, until the placing of a panel or section is completed.

2. Consolidate by previously specified methods, working concrete around reinforcement, embedded items, and into corners.

3. Bring slab surfaces to the correct level with a straight edge and strikeoff. Use bull floats or darbies to smooth the surface, leaving it free of humps and hollows. Do not sprinkle water onto the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.

4. Maintain reinforcing in the proper position during all placement and consolidating operations.

E. Sidewalks, Curb and Gutters:

Concrete shall be handled from transport vehicle to the place of final description in a continuous manner as rapidly as practicable. The rate of placement shall not exceed the rate at which the various placing and finishing operations can be performed in accordance with

these specifications. Where the vertical drop is more than three (3) feet, elephant trunks shall be used.

If concrete is to be placed by the extruded method, the Contractor shall demonstrate to the satisfaction of the Contracting Agency that the machine is capable of placing a dense, uniformly compacted concrete to exact section, line and grade.

F. Cold Weather Placement:

Protect placed concrete from physical damage or reduced strength which could be caused by frost, freezing action, or low temperatures, in compliance with ACI 306 and as follows:

1. When ambient temperature has fallen to or is expected to fall below 40°F., uniformly heat water and aggregates prior to mixing to maintain mixture temperature not less than 50°F. and not more than 80°F. at point of placement.

2. Do not use frozen materials or materials containing ice or snow and do not allow concrete to placed on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other material containing anti-freeze agents or chemical accelerators unless specifically permitted by the Contracting Agency for the particular situation encountered.

3.09 FINISHING FORMED SURFACES

A. Rough Form Finish:

For formed surfaces not exposed to view in the finish work or by other construction, unless otherwise indicated, provide a surface having the texture imparted by the form facing material used with tie holes and defective areas repaired and patched and fins and other projections chipped down and rubbed off.

B. Smooth Form Finish:

For formed surfaces exposed to view, or that are to be covered with a coating or covering material applied to or bonded directly to the concrete, such as waterproofing, damp proofing, painting or other similar system, provide a surface obtained by selecting form facing material, arranged symmetrically orderly with a minimum of seams. Repair and patch defective areas with fins and projections completely removed and smoothed.

C. Smooth Rubbed Finish:

Provide smooth rubbed finish which has received smooth form finish treatment not later than the day after removal of the forms. Moisten the surfaces and rub with carborundum brick or

other abrasive until a uniform color and texture is attained. Do not apply cement grout other than the created by the rubbing process.

D. Grout Cleaned Finish:

Provide grout cleaned finish as scheduled to surfaces which have received smooth form finish by combining one part of portland cement to 1-1/2 parts fine sand by volume, and mixing with water to the consistency of thick paint. Blend standard portland cement and white portland cement in amounts determined by trial patches so that final color of dry grout will closely match adjacent surfaces. Thoroughly wet concrete surfaces and apply grout immediately to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

E. Related Unformed Surfaces:

At tops of walls, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching the adjacent surface. Continue the final surface treatment uniformly across adjacent informed surfaces unless otherwise indicated.

3.10 SLAB FINISHES

A. Scratch Finish:

Where scheduled or shown provide scratch finish on monolithic slab surfaces that are to receive topping or mortar setting beds for tile, terrazzo, or other bonded cementitious finishes.

After placement of slab, plane surface to a tolerance not exceeding 1/4" in 24". Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, rakes, or brooms.

B. Float Finish:

Apply float finish to monolithic slab surfaces that are to receive trowel finish and other finishes described in subsequent paragraphs, and surfaces which are to be covered by membrane or elastic waterproofing, roofing, or other finishes as scheduled.

After screeding and consolidating concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit floating of surface. Consolidate surface with power or hand floats or both, using hand floats in small or inaccessible areas. Float surface to a tolerance not exceeding 1/4" in 10' when tested with a 10' straight edge. Cut down high spots and fill in low spots by floating. Do not apply cement or cement and sand mixture for filling in, use only grout removed from high spots. Uniformly slope to drains. Immediately after leveling refloat surface to a uniform, smooth, granular texture.

C. Trowel Finish:

Apply trowel finish to slab surfaces that are to be exposed to view and surfaces that are to be covered by resilient flooring, paint, or other thin-film finish systems.

After floating, begin first troweling operation with power driven or hand trowels. Begin troweling when surface produces a ringing sound as trowel is moved over surface. Hand trowel as necessary to obtain a smooth surface free of trowel marks and of a uniform texture and appearance, and with a tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge.

D. Broom Finish:

Apply broom finish to exterior and interior platforms, steps, stoops, walks, and ramps, and elsewhere as shown or scheduled.

Immediately after trowel finishing, slightly roughen surface by brooming with a fiber bristle broom perpendicular to direction of travel. Coordinate final finish with Contracting Agency before application.

E. Chemical Hardener/Sealer Finish:

Apply chemical hardener/Sealer finish to interior floors, after complete curing and drying of the concrete surface. Chemical hardeners shall be coordinated with adhesive to be used in conjunction with other flooring materials.

1. Apply uniformly, using a garden-type sprayer, industrial sprayer or roller.

2. Do not add a thinner.

3. When using a short-nap roller, if the rolling action starts to create tiny bubbles on the surface, slow down the rolling motion.

4. Do not overlap; avoid thick applications.

5. Do not "pull" the material when applying.

6. Application rate 350 S.F./gallon.

F. Exposed Aggregate:

1. Provide exposed aggregate surface at locations indicated in the Drawings.

2. Concrete with a maximum slump of 3" shall be used in exposed aggregate areas. Air entrainment shall be in accordance with specifications.

3. Aggregate shall be 3/8" maximum.

4. Screed concrete to proper level. Do not jitterbug or tamp concrete.

5. Floating shall be limited to amount required to ensure that aggregate is surrounded and only slightly covered by mortar, leaving no holes in the surface.

6. Shortly after floating, Masterbuilders Confilm surface retarder may be sprayed over the surface to allow sufficient time to elapse before exposing operation begins.

7. Exposing operation should begin as soon as brushing and hosing of the surface can be done without over-exposing or dislodging the aggregate. Finishers are to stay off the newly exposed surface to avoid breaking the aggregate bond. If it is necessary for finishers to move about on the newly exposed surface, kneeboards are to be used. Kneeboards shall be gently placed on the surface, and shall not be slid or twisted when on the surface.

8. Exposed aggregate slabs shall be cured thoroughly.

3.11 CURING & PROTECTION

A. General:

Protect freshly placed concrete from premature drying and excessive cold, and maintain without drying at a relatively constant temperature for a period of time necessary for hydration of cement and proper hardening. Conduct all curing operations in compliance with ACI 301 & ACI 308.

1. Initiate curing process as soon as free water has disappeared from the concrete surface. Weather permitting, keep continuously moist for not less than 72 hours.

2. Begin final curing procedures immediately following initial curing and before concrete has dried.

3. Continue curing for a minimum of 10 days after initial placement unless otherwise permitted in writing by Contracting Agency.

4. Avoid rapid drying at end of curing period.

5. Maintain concrete surface temperature at least 50°F. for 7 days after following placement of concrete. At least once each shift and once per day on non-work days, an inspection shall be made of all areas subject to cold-weather protection. Any deficiencies shall be noted, corrected, and reported.

B. Curing Methods:

1. Moisture Curing:
   a. Keep concrete surface continuously wet by covering with water or continuous fog spray.

   b. Cover concrete surface with specified absorptive cover, thoroughly saturated with water, and keeping continuously wet. Place absorptive cover to provide coverage at edges, with 4" lap over adjacent absorptive covers.

2. Moisture-cover Curing:
   Cover concrete surfaces with moisture retaining cover, placed in widest practicable width with sides and lapped a minimum of 3" and sealed with waterproof tape or adhesive. Immediately repair any holes or tears occurring during curing period using cover material and waterproof tape.

3. Membrane Curing:

   Do not use membrane curing compounds.

C. Formed Surfaces:

Cure formed surfaces including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above as applicable.

D. Unformed Surfaces:

Cure formed surfaces such as slabs, floor topping and other similar flat surfaces by application of the approved curing method.

Use moisture retaining curing method for surfaces which are to receive liquid floor hardener or finish flooring, unless otherwise specifically directed in writing by the Contracting Agency.

3.12 FORM REMOVAL

A. Non-Supporting Forms:

Formwork not supporting concrete, such as sides of footings, may be removed after cumulatively curing at not less than 50°F. for a minimum of 24 hours after placement, provided concrete has sufficiently hardened not to be damaged by removal operations, and providing curing operations are maintained.

B. Supporting Forms:

Formwork supporting weight of concrete such as beam soffits, joints, slabs and other similar structural elements shall not be removed in less than 14 days, and not until design minimum compressive strength for 28 days has been attained, as determined by testing of field cured specimens representative of actual location of the members in question

C. Metal decking forms shall be left in place.

3.13 RE-USE OF FORMS

Re-use of forms will be permitted only under the following conditions, subject to the approval of the Contracting Agency in each instance:

A. Clean and repair all contact surfaces to achieve capability equal to that of new forms.

B. Split, frayed, delaminated, or otherwise deteriorated facing or supporting materials will not be permitted.

C. Apply new coating compound to contact surfaces as specified for new work.

D. Where forms are extended for successive placement, thoroughly clean all surfaces and tighten to close joints. Align and secure joints to avoid offsets.

E. Do not use "Patched" forms for expressed surfaces unless specifically permitted in writing by Contracting Agency in each particular instance.

3.14 SURFACE REPAIRS

A. General:

Repair and patch defective areas with cement mortar immediately after removal of forms, but only when acceptable to Contracting Agency.

1. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete, but in no case greater than 1".

2. Make edges of cuts perpendicular to the concrete surface.

3. Dampen the area to be patched with water and brush coat with neat cement grout or proprietary bonding agent.

B. Exposed to View Surfaces:

1. Blend white portland cement and standard portland cement so that when dry patching mortar will match color of surrounding surface. Provide test areas at inconspicuous location to verify match.

2. Compact mortar in place and stake off slightly higher than surrounding surface.

3. Apply appropriate finish as provided in 3.09.

C. High Areas:

Correct high areas by grinding, after concrete has cured at least 14 days.

D. Low Areas:

Correct low areas during or immediately after completion of surface finishing operations by cutting out the low area and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used upon approval of the Contracting Agency.

E. Other Repairs:

1. Repair defective areas, except random cracks and single holes not exceeding 1" dia. by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete, and brush with neat cement grout coating or concrete bonding agent. Mix patching concrete of same materials to provide concrete of the same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.

2. Repair isolated random cracks and single holes not over 1" in dia. by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose cement grout coating or concrete bonding agent. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing #16 screen, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

F. Other Methods:

Repair methods not specified may be used, subject to the approval of the Contracting Agency.

3.15 TANK LINING

A. Clean surface prior to application to remove dirt, grease, dust and other deleterious material.

B. Apply to dry surface.

C. Apply per coating manufacturers recommendations.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior trim, including non-fire-rated interior door frames.
2. Shelving

1.2 DEFINITIONS

A. MDF: Medium-density fiberboard.

B. MDO: Plywood with a medium-density overlay on the face.

C. PVC: Polyvinyl chloride.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

B. Samples: For each exposed product and for each color and texture specified.

C. Samples for Initial Selection: For each type of product involving selection of colors, profiles, or textures.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.

1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
2. Provide for air circulation around stacks and under coverings.

B. Deliver interior finish carpentry materials only when environmental conditions comply with requirements specified for installation areas. If interior finish carpentry materials must be stored in other than installation areas, store only where environmental conditions comply with requirements specified for installation areas.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet-work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with applicable rules of any rules-writing agency certified by the American Lumber Standard Committee's (ALSC) Board of Review. Grade lumber by an agency certified by the ALSC's Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by grading agency.

B. Softwood Plywood: DOC PS 1.

C. Hardboard: ANSI A135.4.

D. MDF: ANSI A208.2, Grade 130

2.2 INTERIOR TRIM

A. Lumber Trim for Opaque Finish (Painted Finish):
1. Species and Grade: Spruce-pine-fir; NeLMA, NLGA, WCLIB, or WWPA 1 Common.
2. Maximum Moisture Content: 15 percent with at least 85 percent of shipment at 12 percent or less.
3. Finger Jointing: Allowed.
4. Face Surface: Surfaced (smooth).
5. Optional Material: Primed MDF of same actual dimensions as lumber indicated may be used in lieu of lumber.

2.3 SHELVING AND CLOTHES RODS

A. Shelving: Made from the following material, 3/4 inch (19 mm) thick:
1. MDO softwood plywood with solid-wood edge.

B. Shelf Brackets without Rod Support: BHMA A156.16, B04041; prime-painted formed steel.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

B. Multipurpose Construction Adhesive: Formulation, complying with ASTM D 3498, that is recommended for indicated use by adhesive manufacturer.

2.5 FABRICATION

A. Back out or kerf backs of the following members, except those with ends exposed in finished work:
   1. Interior standing and running trim, except shoe and crown molds.

B. Ease edges of lumber less than 1 inch in nominal thickness to 1/16-inch radius and edges of lumber 1 inch or more in nominal thickness to 1/8-inch radius.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

3.3 INSTALLATION, GENERAL

A. Do not use materials that are unsound; warped; improperly treated or finished; inadequately seasoned; too small to fabricate with proper jointing arrangements; or with defective surfaces, sizes, or patterns.

B. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials.

   1. Use concealed shims where necessary for alignment.
   2. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
   3. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
   4. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining interior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
   5. Coordinate interior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate interior finish carpentry.

3.4 STANDING AND RUNNING TRIM INSTALLATION

A. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available.

1. Do not use pieces less than 24 inches (610 mm) long, except where necessary.
2. Stagger joints in adjacent and related standing and running trim.
3. Miter at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint.
4. Use scarf joints for end-to-end joints.
5. Plane backs of casings to provide uniform thickness across joints where necessary for alignment.
6. Match color and grain pattern of trim for transparent finish (stain or clear finish) across joints.
7. Install trim after gypsum-board joint finishing operations are completed.
8. Install without splitting; drill pilot holes before fastening where necessary to prevent splitting.
9. Fasten to prevent movement or warping.
10. Countersink fastener heads on exposed carpentry work and fill holes.

3.5 SHELVING INSTALLATION

A. Install shelf brackets according to manufacturer's written instructions, spaced not more than 32 inches (800 mm) o.c. Fasten to framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors.

B. Cut shelves to neatly fit openings with only enough gap to allow shelves to be removed and reinstalled.

1. Install shelves, fully seated on cleats, brackets, and supports.
2. Fasten shelves to cleats with finish nails or trim screws, set flush.
3. Fasten shelves to brackets to comply with bracket manufacturer's written instructions.

3.6 ADJUSTING

A. Replace interior finish carpentry that is damaged or does not comply with requirements.

1. Interior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

B. Adjust joinery for uniform appearance.

3.7 CLEANING

A. Clean interior finish carpentry on exposed and semiexposed surfaces.

B. Restore damaged or soiled areas and touch up factory-applied finishes if any.

3.8 PROTECTION

A. Protect installed products from damage from weather and other causes during construction.

B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062023

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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. Plastic-laminate-faced architectural cabinets.
2. Solid Surface Countertops
3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets unless concealed within other construction before cabinet installation.

1.3 ACTION SUBMITTALS

A. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1.4 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements before countertop fabrication is complete.
B. Field Measurements: Verify dimensions of existing casework to be reused.

1.5 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in- service performance.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar operations that could damage woodwork have been completed in installation areas. If cabinets must be stored in other than installation areas,store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed.
2. Field measure existing casework to be reused.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

A. Coordinate reuse of existing salvaged casework and associated hardware for break room.

B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that cabinets can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.

1. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

B. Grade: Custom.

C. Type of Construction: Face frame.

D. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.

E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard. Provide high-pressure plastic laminate manufactured by one of the following:
1. Wilsonart International Holdings, Inc.

F. Laminate Cladding for Exposed Surfaces:
1. Horizontal Surfaces: Grade HGS.
2. Postformed Surfaces: Grade HGP.
3. Vertical Surfaces: Grade HGS.
4. Edges: PVC T-mold matching laminate in color, pattern, and finish.
5. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.

G. Materials for Semi-exposed Surfaces:
1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS.
   a. Edges of Plastic-Laminate Shelves: PVC T-mold matching laminate in color, pattern, and finish.
   b. Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.
   c. For semiexposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.
2. Drawer Sides and Backs: Solid-hardwood lumber.
3. Drawer Bottoms: Hardwood plywood.

H. Dust Panels: 1/4-inch plywood or tempered hardboard above compartments and drawers unless located directly under tops.

I. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

J. Drawer Construction: Fabricate with exposed fronts fastened to sub-front with mounting screws from interior of body.

1. Join sub-fronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

K. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As indicated by laminate manufacturer's designations on the Drawings.

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 4 to 9 percent.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard: ANSI A208.2, Grade 130.
2. Particleboard: ANSI A208.1 Grade M-2-Exterior Glue.
3. Softwood Plywood: DOC PS 1.
4. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.3 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets

B. Butt Hinges: 2-3/4-inch , five-knuckle steel hinges made from 0.095-inch-thick metal, and as follows:

1. Semi-concealed Hinges for Overlay Doors: BHMA A156.9, B01521.

C. Wire Pulls: Back mounted, solid metal, 5 inches long, 2-1/2 inches deep, and 5/16 inch in diameter.

D. Catches: Magnetic catches, BHMA A156.9, B03141.

E. Adjustable Shelf Standards and Supports: BHMA A156.9, B04102; with shelf brackets, B04112.

F. Drawer Slides: BHMA A156.9.

1. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated- steel ball-bearing slides.
2. For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 1.
3. For drawers more than 3 inches high but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100.
4. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD- 200.
5. For computer keyboard shelves, provide Grade 1HD-100.
6. For trash bins not more than 20 inches high and 16 inches wide, provide Grade 1HD-200.

G. Door Locks: BHMA A156.11, E07121.

H. Drawer Locks: BHMA A156.11, E07041.

I. Door and Drawer Silencers: BHMA A156.16, L03011.

J. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
1. Satin Stainless Steel: BHMA 630.

K. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous- metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesives: Do not use adhesives that contain urea formaldehyde.

D. Adhesives: Use adhesives that meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Adhesive for Bonding Plastic Laminate: Un-pigmented contact cement.
1. Adhesive for Bonding Edges: Hot-melt adhesive.

2.5 CABINET FABRICATION

A. Fabricate cabinets to dimensions, profiles, and details indicated.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

D. Install glass to comply with applicable requirements in Section 08800 "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

2.6 COUNTERTOPS

A. Countertops, General: Provide units with smooth surfaces in uniform plane, free of defects. Make exposed edges and corners straight and uniformly beveled. Provide front and end overhang of 1 inch, with continuous drip groove on underside 1/2 inch from edge.

B. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.

C. Plastic-Laminate Material:
1. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of plastic-laminate-clad countertops indicated for construction, finishes, installation, and other requirements.
2. Grade: Custom.
3. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.
4. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   a. As indicated on the Drawings in a finish schedule.
5. Edge Treatment: 3-mm PVC edging.
6. Core Material: Particleboard or medium-density fiberboard.
7. Core Material at Sinks: Particleboard made with exterior glue.
8. Core Thickness: 3/4 inch (19 mm).
   a. Build up countertop thickness to 1-1/2 inches (38 mm) at front, back, and ends with additional layers of core material laminated to top.
9. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.

D. Solid Surface Materials Countertops and Backsplashes (at toilet rooms only):
1. Configuration: Provide countertops with the following front and backsplash style:
   a. Countertop Configuration: Flat, 3/4 inch thick, with rounded edge and corners, and with drip groove and integral coved or applied backsplash of configuration indicated on the drawings.
   b. Countertop Construction: Uniform throughout full thickness.
   c. Backsplashes: 3/4-inch-thick, solid surface material.
2. Color: As indicated by manufacturer’s designations on the Drawings.

E. Fabrication: Fabricate tops in one piece with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
1. Fabricate with loose backsplashes for field assembly.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required.

3.2 CABINET INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
   1. Use filler matching finish of items being installed.

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
   2. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips or with toggle bolts through metal backing or metal framing behind wall finish.

3.3 INSTALLATION OF COUNTERTOPS

A. Comply with installation requirements in SEFA 2.3. Abut top and edge surfaces in one true plane with flush hairline joints and with internal supports placed to prevent deflection. Locate joints only where indicated on Shop Drawings.

B. Field Jointing: Where possible, make in same manner as shop-made joints, using dowels, splines, fasteners, adhesives, and sealants recommended by manufacturer. Shop prepare edges for field-made joints.

C. Fasten plastic-laminate countertops by screwing through corner blocks of base units into underside of countertop. Pre-drill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
   1. Install backsplashes and end-splashes to comply with manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

D. Provide required holes and cutouts for service fittings.

E. Seal unfinished edges and cutouts in plastic-laminate countertops with heavy coat of polyurethane varnish.

F. Provide scribe moldings for closures at junctures of countertop, curb, and splash with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent casework.

G. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

3.4 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semi-exposed surfaces.

END OF SECTION

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 glass-fiber-reinforced-plastic gratings.

1.3 COORDINATION

A. Coordinate installation of anchorages for gratings, grating frames, and supports. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data: For glass-fiber-reinforced-plastic gratings.

B. Shop Drawings: Include plans, sections, details, and attachments to other work.

C. Delegated-Design Submittal: For gratings, including manufacturer's published load tables.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fibergrate Composite Structures

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design gratings.

B. Structural Performance: Gratings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.

1. Floors: Uniform load of 250 lbf/sq. ft. (11.97 kN/sq. m) or concentrated load of 3000 lbf (13.40 kN), whichever produces the greater stress.
2. Walkways and Elevated Platforms Used as Exits: Uniform load of 100 lbf/sq. ft. (4.79 kN/sq. m).
3. Limit deflection to L/360 or 1/4 inch (6.4 mm), whichever is less.

C. Seismic Performance: Gratings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Component Importance Factor: 1.5.

2.3 GLASS-FIBER-REINFORCED-PLASTIC GRATINGS

A. Pultruded Glass-Fiber-Reinforced Gratings: Bar gratings assembled from components made by simultaneously pulling glass fibers and extruding thermosetting plastic resin through a heated die under pressure to produce a product without voids and with a high glass-fiber content.

1. Configuration: T2515; 1-1/2-inch (38-mm) T-bars spaced 2 inches (51 mm) o.c. (25 percent open)
2. Weight: 2.9 lb/sq. ft.
3. Resin Type: Vinylester
    a. Flame-Spread Index: 25 or less when tested according to ASTM E 84.
    b. USDA Acceptance: Accepted for food-processing applications.
4. Color: Gray
5. Traffic Surface: Applied abrasive finish

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts, and, where indicated, flat washers; ASTM F 593 (ASTM F 738M) for bolts and ASTM F 594 (ASTM F 836M) for nuts, Alloy [Group 1 (A1)] [Group 2 (A4)].

D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

2.5 FABRICATION

A. Shop Assembly: Shop fabricate grating sections to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form gratings from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.

D. Fit exposed connections accurately together to form hairline joints.

E. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space the anchoring devices to secure gratings, frames, and supports rigidly in place and to support indicated loads.

F. Fabricate cutouts in grating sections for penetrations indicated. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.

2.6 GRATING FRAMES AND SUPPORTS

A. Frames and Supports for Glass-Fiber-Reinforced-Plastic Gratings: Fabricate from glass-fiber-reinforced-plastic shapes of sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.

1. Unless otherwise indicated, use shapes made from same resin as gratings.
2. Equip units indicated to be cast into concrete or built into masonry with integral anchors.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing gratings to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.

D. Fit exposed connections accurately together to form hairline joints.

3.2 INSTALLING GLASS-FIBER-REINFORCED-PLASTIC GRATINGS

A. Comply with manufacturer's written instructions for installing gratings. Use manufacturer's standard stainless-steel anchor clips and hold-down devices for bolted connections.

END OF SECTION 067413

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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. Cold-applied, emulsified-asphalt dampproofing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 FIELD CONDITIONS

A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers' written instructions.

B. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has cured.

PRODUCTS

1.5 MANUFACTURERS

A. Source Limitations: Obtain primary dampproofing materials and primers from single source from single manufacturer. Provide auxiliary materials recommended in writing by manufacturer of primary materials.

1.6 PERFORMANCE REQUIREMENTS

A. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction unless otherwise indicated.

1.7 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Brush and Spray Coats: ASTM D 1227, Type III, Class 1.

1.8 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.

B. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended in writing by manufacturer.

1.9 INSULATION

A. Insulation: Comply with Section 072100 "Thermal Insulation" for insulation.

EXECUTION

1.10 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for surface smoothness, maximum surface moisture content, and other conditions affecting performance of the Work.

B. Proceed with application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

1.11 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for dampproofing application.

B. Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.

1.12 APPLICATION, GENERAL

A. Comply with manufacturer's written instructions for dampproofing application, cure time between coats, and drying time before backfilling unless otherwise indicated.
1. Apply dampproofing to provide continuous plane of protection.
2. Apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.

B. Where dampproofing footings and foundation walls, apply from finished-grade line to top of footing; extend over top of footing and down a minimum of 6 inches over outside face of footing.
1. Extend dampproofing 12 inches onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.

C. Where dampproofing interior face of above-grade, exterior concrete and masonry walls, continue dampproofing through intersecting walls by keeping vertical mortar joints at intersection temporarily open or by dampproofing wall before constructing intersecting walls.

1.13 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Apply two brush or spray coats at not less than 1.5 gal./100 sq. ft. for first coat and 1 gal./100 sq. ft. for second coat.

1.14 PROTECTION

A. Correct dampproofing that does not comply with requirements; repair substrates, and reapply dampproofing.

END OF SECTION 071113

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. Foam-plastic board insulation.
2. Glass-fiber blanket insulation.
3. Vapor retarders.

B. Related Sections:
1. Division 7 Section "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing" for insulation specified as part of roofing construction.
2. Division 9 Section "Gypsum Board" for installation in wood or metal-framed acoustical wall and ceiling assemblies of insulation specified by referencing this Section.

1.3 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:
1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

1.1 MOLDED POLYSTYRENE FOAM-PLASTIC BOARD

A. Below Grade Insulation
1. Molded Polystyrene Board, Type IV: ASTM C 578, Type IX, 25-psi minimum compressive strength, 1.8 pcf density.
2. Insulfoam – R-Tech or substitution approved by Architect.

2.2 GLASS-FIBER BLANKET INSULATION

A. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for

combustion characteristics.

1. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.3 VAPOR RETARDERS

A. Reinforced-Polyethylene Vapor Retarders: Two outer layers of polyethylene film laminated to an inner reinforcing layer consisting of either nylon cord or polyester scrim and weighing not less than 25 lb/1000 sq. ft., with maximum permeance rating of 0.0507 perm.

B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

C. Single-Component Non-sag Urethane Sealant: ASTM C 920, Type I, Grade NS, Class 25, Use NT related to exposure, and Use O related to vapor-barrier-related substrates.

D. Adhesive for Vapor Retarders: Product recommended by vapor-retarder manufacturer and has demonstrated capability to bond vapor retarders securely to substrates indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF BELOW-GRADE INSULATION

A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

3.4 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Foam-Plastic Board Insulation: Seal joints between units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Glass-Fiber Insulation: Install in cavities formed by framing members according to the following requirements:
   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
   4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
   5. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
   6. For wood-framed construction, install blankets according to ASTM C 1320 and as follows:

D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

3.5 INSTALLATION OF VAPOR RETARDERS

A. Place vapor retarders on side of construction indicated on Drawings. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives or other anchorage system as indicated. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

B. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs.
   1. Fasten vapor retarders to wood framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches o.c.
   2. Before installing vapor retarders, apply urethane sealant to flanges of metal framing including runner tracks, metal studs, and framing around door and window openings. Seal overlapping joints in vapor retarders with vapor-retarder tape according to vapor- retarder manufacturer's written instructions. Seal butt joints with vapor-retarder tape. Locate all joints over framing members or other solid substrates.
   3. Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer.

C. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.

D. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

3.6 PROTECTION

A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

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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. Building wrap.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. For building wrap, include data on air and water-vapor permeance based on testing according to referenced standards.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

A. Building Wrap: ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.
1. Water-Vapor Permeance: Not less than 75 perms per ASTM E 96/E 96M, Desiccant Method (Procedure A).
2. Air Permeance: Not more than 0.004 cfm/sq. ft. at 0.3-inch wg when tested according to ASTM E 2178.
3. Allowable UV Exposure Time: Not less than three months.
4. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
5. Color: Black

B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

2.2 MISCELLANEOUS MATERIALS

A. Nails and Staples: ASTM F 1667.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed.

B. Cover sheathing with water-resistive barrier as follows:
1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.

2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.

C. Building Wrap: Comply with manufacturer's written instructions.
1. Seal seams, edges, fasteners, and penetrations with tape.
2. Extend into jambs of openings and seal corners with tape.

END OF SECTION

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 standing-seam metal roof panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with metal panel Installer, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review structural loading limitations of deck during and after roofing.
6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
8. Review temporary protection requirements for metal panel systems during and after installation.
9. Review procedures for repair of metal panels damaged after installation.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty: Manufacturer's custom form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

D. <u>Warranty dispute must occur in the jurisdiction where the products are installed.</u>

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.
2. Deflection Limits: For wind loads, no greater than 1/180 of the span.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E 1680[or ASTM E 283] at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa).

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646[or ASTM E 331] at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft. (137 Pa).

D. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.

E. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces

2.2 STANDING-SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.

A. Integral-Standing-Seam Metal Roof Panels: Formed with integral ribs at panel edges and [intermediate stiffening ribs symmetrically spaced] [a flat pan] between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and lapping and interconnecting side edges of adjacent panels.

1. Manufacturers: Subject to compliance with requirements, available products include:

a. TBD

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

a. Nominal Thickness: Min. 26 gauge
b. Exterior Finish: Three-coat fluoropolymer
c. Color: TBD

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.

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

    a. Grace.
    b. Henry Company.
    c. Owens Corning.

B. Felt Underlayment: ASTM D 226/D 22M, Type II (No. 30), asphalt-saturated organic felts.

2.4 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- (2400-mm-) long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches (914 mm) o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match roof fascia and rake trim.

E. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot- (3-m-) long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.

F. Panel Fasteners: Self-tapping screws designed to withstand design loads.

G. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.

3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.5 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:
1. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the roof area indicated below:

    a. Roof perimeter for a distance up from eaves of 36 inches (914 mm) beyond interior wall line.
    b. Around dormers, chimneys, skylights, and other penetrating elements for a distance from element of 18 inches (460 mm).

B. Felt Underlayment: Apply at locations indicated below, in shingle fashion to shed water, and with lapped joints of not less than 2 inches (50 mm).

1. Apply on roof not covered by self-adhering sheet underlayment. Lap over edges of self-adhering sheet underlayment not less than 3 inches (75 mm), in shingle fashion to shed water.

3.4 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal

panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
5. Watertight Installation:

    a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
    c. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where

possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Connect downspouts to underground drainage system indicated.

J. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

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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. Exposed-fastener, lap-seam metal wall panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with metal panel Installer, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel systems during and after installation.
8. Review procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty dispute must occur in the jurisdiction where the products are installed.

3. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

3. Warranty dispute must occur in the jurisdiction where the products are installed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings
3. Deflection Limits: For wind loads, no greater than 1/180 of the span.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa)

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft. (137 Pa)

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces

2.2 EXPOSED-FASTENER, LAP-SEAM METAL WALL PANELS

A. General: Provide factory-formed metal panels designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weathertight installation.

B. Dutch Lap Steel

1. Manufacturers: Subject to compliance with requirements, available products include:

    a. TruCedar

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

    a. Nominal Thickness: Min. 29 gauge
    b. Exterior Finish: Three-coat fluoropolymer
    c. Color: TBD

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.4 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:
1. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
5. Flash and seal panels with weather closures at perimeter of all openings.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

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. Formed low-slope roof sheet metal fabrications.
2. Formed wall sheet metal fabrications (coping).
3. Formed equipment support flashing.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leak-proof, secure, and noncorrosive installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim.

C. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory- applied finishes.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.7 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

B. **Warranty dispute must occur in the jurisdiction where the products are installed.**

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install copings tested according to SPRI ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on the Structural Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 coating designation] or aluminum-zinc alloy-coated steel sheet according to ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40. Where indicated provide material pre-painted by coil-coating process to comply with ASTM A 755/A 755M.

1. Surface: Smooth, flat.

2. Exposed Coil-Coated Finish (Pre-finished) where indicated:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

3. Color: As indicated on the Drawings in the finish schedule.

4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2.3 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; non-perforated.

120 deg F; and complying with physical requirements of ASTM D 226/D 226M for Type I and Type II felts.

B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.

b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

2. Fasteners for Zinc-Coated (Galvanized) or Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape 1/2 inch wide and 1/8 inch thick.

D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane, polysulfide or silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

F. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D1187.

G. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

2. Obtain field measurements for accurate fit before shop fabrication.

3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.

4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, non-expansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Do not use graphite pencils to mark metal surfaces.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, fasten and seal water-tight. Shop fabricate interior and exterior corners.
1. Coping Profile: AS indicated, verify dimensions prior to fabrication
2. Joint Style: Butted with expansion space and 6-inch-wide, concealed backup plate.
3. Fabricate from the Following Materials:
a. Galvanized Steel: 0.040 inch thick.
b. Aluminum-Zinc Alloy-Coated Steel: 0.040 inch (1.02 mm) thick.

B. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
1. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

C. Counter-flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
1. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.

D. Flashing Receivers: Fabricate from the following materials:
1. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.

E. Roof-Penetration Flashing: Fabricate from the following materials:
1. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

2.7 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:
1. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

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

3.2 UNDERLAYMENT INSTALLATION

A. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

B. Apply slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.
6. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure- treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.

D. Fasteners: Use fastener sizes that penetrate [wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Section 07920 "Joint Sealants."

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weatherresistant.

B. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.
1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 16-inch centers.
2. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.

C. Pipe or Post Counter-flashing: Install counter-flashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

D. Counter-flashing: Coordinate installation of counter-flashing with installation of base flashing. Insert counter-flashing in reglets or receivers and fit tightly to base flashing. Extend counter-flashing 4 inches over base flashing. Lap counter-flashing joints minimum of 4 inches. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant interlocking folded seam anchor and washer at 36-inch centersunless otherwise indicated.

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.5 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation

of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill,[jamb,] and similar flashings to extend 4 inches beyond wall openings.

3.6 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.7 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean off excess sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are

installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

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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. Silicone joint sealants.
2. Polysulfide joint sealants.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.5 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint- sealant manufacturer[or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:
1. Sealants and sealant primers for nonporous substrates shall have a VOC content of 250 g/L or less.
2. Sealants and sealant primers for porous substrates shall have a VOC content of 750 g/L or less.

C. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

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

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Non-sag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Dow Corning Corporation; 790.
   b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
   c. May National Associates, Inc.; Bondaflex Sil 290.
   d. Pecora Corporation; 301 NS.
   e. Sika Corporation, Construction Products Division; SikaSil-C990.
   f. Tremco Incorporated; Spectrem 1.
2. Use for interior locations

2.3 POLYSULFIDE JOINT SEALANTS

A. Immersible, Multi-component Non-sag, Traffic-Grade, Polysulfide Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use T and Use I.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following::
      a. Pecora Corporation; Synthacalk GC-2+.
   2. Use for Exterior Locations.

2.4 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
      a. Concrete.
      b. Masonry.
   3. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
      a. Metal.
      b. Glass.
      c. Porcelain enamel.
      d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint- sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces subject to water immersion.
   1. Material: Polysufide Joint Sealant
   2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors

B. Joint Sealant Application: General uses other than those specified above including backsplash and wall interfaces, plumbing fixture interfaces with architectural materials and elsewhere as indicated.
   1. Material: Silicone Joint Sealant.
   2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION

PART 1 - GENERAL

1.1 RElATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes hollow-metal work.

B. Related Requirements:
1. Division 8 Section "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include the following:
1. Elevations of each door type.

C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.7 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Amweld Building Products, LLC.
   2. Ceco Door Products; an Assa Abloy Group company.
   3. Curries Company; an Assa Abloy Group company.
   4. Steelcraft; an Ingersoll-Rand company.
   5. Windsor Republic Doors.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 INTERIOR FRAMES

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Frames: SDI A250.8, Level 2.
   1. Physical Performance: Level B according to SDI A250.4.
   2. Frames:
      a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
      b. Construction: Full profile welded.
   3. Exposed Finish: Prime.

2.3 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.
   1. Physical Performance: Level B according to SDI A250.4.
   2. Doors:
      a. Type: As indicated in the Door and Frame Schedule.
      b. Thickness: 1-3/4 inches.
      c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40 coating.
      d. Edge Construction: Model 1, Full Flush.
      e. Core: Manufacturer's standard, polystyrene, polyurethane, polyisocyanurate, core at manufacturer's discretion.
         1) Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.
   3. Frames:
      a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
      b. Construction: Two piece thermally broken Full profile welded with butyl or manufacturer’s standard thermal break separator material.
   4. Exposed Finish: Prime.

2.4 FRAME ANCHORS

A. Jamb Anchors:
   1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
   2. Post-installed Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat

reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.5 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

G. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke- developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

H. Glazing: Comply with requirements in Division 8 Section "Glazing."

2.6 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:
1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
2. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches. Provide beveled or square edges at manufacturer's discretion].
3. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
4. Bottom Edge Closures: Close bottom edges of doors with end closures or channels of same material as face sheets.
5. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Sidelight Frames: Provide closed tubular members with no visible face seams or joints, fabricated

from same material as door frame. Fasten members at crossings and to jambs by butt welding.

2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
4. Jamb Anchors: Provide number and spacing of anchors as follows:
   a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      1) Three anchors per jamb up to 60 inches high.
      2) Four anchors per jamb from 60 to 90 inches high.
      3) Five anchors per jamb from 90 to 96 inches high.
   b. Post-installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
5. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
6. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure (room) side of hollow-metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow-metal work.
5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.7 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer compatible with field finish painting specified in Division 9 Sections “Interior Painting” (interior doors and frame and interior sides of exterior doors and frames and “High Performance Coatings” (exterior sides of exterior doors and frames).
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.8 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    b. Install frames with removable stops located on secure side of opening.
    c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    d. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
    a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
4. In-Place Concrete Construction: Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
5. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
   1. Non-Fire-Rated Steel Doors:
      a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
      b. At Bottom of Door: 5/8 inch.
      c. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.
   2. Smoke-Control Doors (All Corridor Doors): Install doors and gaskets according to NFPA 105.

D. Glazing: Comply with installation requirements in Division 8 Section "Glazing" and with hollow-metal manufacturer's written instructions.
   1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

C. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

D. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

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. Factory finishing flush wood doors.
2. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:
1. Division 8 Section “Steel Doors and Frames” for door frames to receive flush wood doors.
2. Division 8 Section “Door Hardware” for hardware to be applied to flush wood doors.
3. Division 8 Section "Glazing" for glass view panels in flush wood doors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction, and trim for openings. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
1. Dimensions and locations of mortises and holes for hardware.
2. Dimensions and locations of cutouts.
3. Undercuts.
4. Requirements for veneer matching.
5. Doors to be factory finished and finish requirements.
6. Fire-protection ratings for fire-rated doors.

C. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

C. Warranty dispute must occur in the jurisdiction where the products are installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weather-tight, wet

work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Algoma Hardwoods, Inc.
   2. Ampco, Inc.
   3. Vancouver Door Company.
   4. VT Industries Inc.

B. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."
   1. Provide AWI Quality Certification Labels indicating that doors comply with requirements of grades specified.
   2. Contract Documents contain selections chosen from options in quality standard and additional requirements beyond those of quality standard. Comply with those selections and requirements in addition to quality standard.

B. Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.

C. Smoke- and Draft-Control Door Assemblies (All Corridor Doors): Listed and labeled for smoke and draft control, based on testing according to UL 1784.

2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:
   1. Grade: Custom (Grade A faces).
   2. Species: Select white birch.
   3. Cut: Rotary cut.
   4. Match between Veneer Leaves: Pleasing match.
   5. Assembly of Veneer Leaves on Door Faces: Running match.
   6. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
   7. Exposed Vertical Edges: Same species as faces - edge Type A.
   8. Core: Particleboard.
   9. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering.

2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA- 156.115-W, and hardware templates.
   1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.

C. Openings: Factory cut and trim openings through doors.
   1. Lite Openings: Trim openings with moldings of material and profile indicated.
   2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 8 Section "Glazing."

2.5 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
   1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Transparent Finish:
   1. Grade: Custom.
   2. Finish: AWI's, and AWMAC's, "Architectural Woodwork Standards" [System 5, conversion varnish or System 11, catalyzed polyurethane.
   3. Finish: WDMA TR-4 conversion varnish or WDMA TR-6 catalyzed polyurethane.
   4. Staining: None required.
   5. Effect: Open-grain finish.
   6. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.
   1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

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

3.2 INSTALLATION

A. Hardware: For installation, see Division 8 Section "Door Hardware."**.**

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
   1. Install smoke- and draft-control doors according to NFPA 105.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION

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 fiberglass-framed windows.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for fiberglass windows.

B. Shop Drawings: For fiberglass windows.

1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

C. Product Schedule: For fiberglass windows. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each type of fiberglass window, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's warranties.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating fiberglass windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.

B. Installer Qualifications: An installer acceptable to fiberglass window manufacturer for installation of units required for this Project.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace fiberglass windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to meet performance requirements.
b. Structural failures including excessive deflection, water leakage, and air infiltration.
c. Faulty operation of movable sash and hardware.
d. Deterioration of materials and finishes beyond normal weathering.
e. Failure of insulating glass.

2. Warranty Period:

a. Window: 10years from date of Substantial Completion.
b. Glazing Units: 10 years from date of Substantial Completion.

3. Warranty dispute must occur in the jurisdiction where the products are installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fiberglass windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Window Certification: WDMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: CW
2. Minimum Performance Grade: 30

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.25 (Imperial) / 1.4 (Metric)

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.27

E. Sound Transmission Class (STC): Rated for not less than 30 STC when tested for laboratory sound transmission loss according to ASTM E 90 and determined by ASTM E 413.

F. Outside-Inside Transmission Class (OITC): Rated for not less than 26 OITC when tested for laboratory sound transmission loss according to ASTM E 90 and determined by ASTM E 1332.

G. Windborne-Debris-Impact Resistance: Capable of resisting impact from windborne debris based on testing glazed windows identical to those specified, according to ASTM E 1886 and testing information in ASTM E 1996 and requirements of authorities having jurisdiction.

2.3 FIBERGLASS WINDOWS

A. Cascadia Windows and Doors – Langley, BC, Canada.

B. Or other pre-approved manufacturer.

C. Operating Types: Provide the following operating types in locations indicated on Drawings:

D. Frames and Sashes: Pultruded fiberglass complying with AAMA/WDMA/CSA 101/I.S.2/A440 and with exposed exterior fiberglass surfaces finished with manufacturer's standard enamel coating complying with [AAMA 613] [AAMA 623].

1. Exterior Color: As selected by Architect from manufacturer's full range
2. Interior Finish: Matching exterior finish

E. Insulating-Glass Units: ASTM E 2190.

1. Glass: ASTM C 1036, Type 1, Class 1, q3.

a. Tint: Clear
b. Kind: Fully tempered [where indicated on Drawings]

2. Lites: Two
3. Filling: Fill space between glass lites with argon.

F. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

G. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock fiberglass windows, and sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As indicated by manufacturer's designations

H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 FABRICATION

A. Fabricate fiberglass windows in sizes indicated. Include a complete system for installing and anchoring windows.

B. Glaze fiberglass windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of

window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.

B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

3.3 FIELD QUALITY CONTROL

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

1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.

B. Testing Services: Testing and inspecting of installed windows shall take place as follows:

1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502.
2. Air-Infiltration Testing:

    a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.
    b. Allowable Air-Leakage Rate: 1.6 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.

3. Water-Resistance Testing:

a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
b. Allowable Water Infiltration: No water penetration.

4. Test Reports: Prepared according to AAMA 502.

C. Windows will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.4 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

B. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.

1. Keep protective films and coverings in place until final cleaning.

C. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION

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SECTION 087100 - DOOR HARDWARE

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. Mechanical door hardware for the following:
      A. Swinging doors.

1.3 COORDINATION

A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   1. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
   2. Content: Include the following information:
      A. Identification number, location, hand, fire rating, size, and material of each door and frame.
      B. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
      C. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.

C. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and Architectural Hardware Consultant.

B. Product Certificates: For each type of electrified door hardware.

1. Certify that door hardware for use on each type and size of labeled fire-rated doors complies with listed fire-rated door assemblies.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
1. Scheduling Responsibility: Preparation of door hardware and keying schedule.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys and permanent cores to Owner.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
A. Structural failures including excessive deflection, cracking, or breakage.
B. Faulty operation of doors and door hardware.
C. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
A. Exit Devices: Two years from date of Substantial Completion.
B. Manual Closers: 10 years from date of Substantial Completion.

B. <u>Warranty dispute must occur in the jurisdiction where the products are installed.</u>

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of door hardware from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.
1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
2. Comply with the following maximum opening-force requirements:
A. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
B. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
C. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

2.3 SCHEDULED DOOR HARDWARE

A. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.
1. Door hardware is scheduled in Part 3.

2.4 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
A. Allegion
B. Hager Companies
C. McKinney
D. Stanley Commercial Hardware

2.5 LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
3. Deadbolts: Minimum 1-inch (25-mm) bolt throw.

C. Lock Backset: 2-3/4 inches (70 mm) unless otherwise indicated.
1. Lock Trim:
A. Description: Match existing.
B. Levers: Match Existing
C. Escutcheons (Roses): Match Existing.
D. Dummy Trim: Match lever lock trim and escutcheons.

D. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

E. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

F. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.

G. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.

H. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.

I. Mortise Locks: BHMA A156.13; Security Grade 2; stamped steel case with steel or brass parts; Series 1000.
   1. Manufacturers: Subject to compliance with requirements, provide products by the following:
      A. Allegion
      B. Best
      C. Dorma
      D. Hager Companies
      E. Sargent
      F. Stanley
      G. Yale

2.6 ELECTRIC STRIKES

A. Electric Strikes: BHMA A156.31; [Grade 1] [Grade 2]; with faceplate to suit lock and frame.
   1. Allegion
   2. Assa Abbloy
   3. Hager
   4. Stanley Commercial Hardware

2.7 ELECTROMAGNETIC LOCKS

A. Electromagnetic Locks: BHMA A156.23; electrically powered; with electromagnet attached to frame and armature plate attached to door; full-exterior or full-interior type, as required by application indicated.
   1. Allegion
   2. Assa Abloy
   3. Dorma
   4. Hager

2.8.1 MANUAL FLUSH BOLTS

A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch (19-mm) throw; designed for mortising into door edge.
   1. Allegion
   2. Trimco

2.8 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.
   1. Manufacturers: Subject to compliance with requirements, provide products by the following:
      A. Allegion
      B. Dorma
      C. Hager
      D. Sargent

E. Stanley
F. Yale

2.9 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
1. Allegion
2. ASSA, Inc.
3. Best Access Systems
4. Hager
5. Sargent
6. Stanley
7. Yale

B. Standard Lock Cylinders: BHMA A156.5; Grade 2 permanent cores; face finished to match lockset.

C. Core Type: Interchangeable

D. High-Security Lock Cylinders: BHMA A156.30; Grade 2 permanent cores that are removable; face finished to match lockset.

E. Type: E, electrical.

F. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

G. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.10 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock.
1. Existing System:
A. Master key or grand master key locks to Owner's existing system.

B. Keys: Brass.
1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
A. Notation: "DO NOT DUPLICATE."

2.11 OPERATING TRIM

A. Operating Trim: BHMA A156.6; stainless steel unless otherwise indicated.

2.12 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
A. Allegion
B. Dorma

C. Hager Companies
D. Norton Door Controls
E. Sargent
F. Stanley
G. Yale

2.13 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
A. Allegion
B. American Specialties
C. Architectural Builders Hardware
D. Baldwin
E. Hager
F. Rockwood
G. Trimco

2.14 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
1. Hager
2. National guard
3. Pemko

B. Maximum Air Leakage: When tested according to ASTM E 283 with tested pressure differential of 0.3-inch wg, as follows:
1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. of door opening.
2. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
3. Gasketing on Double Doors: 0.50 cfm per foot of door opening.

2.15 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
1. Hager
2. National Guard
3. Pemko
4. Rockwood

2.16 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: BHMA A156.6:
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
A. Allegion
B. Hager
C. Inpro
D. Rockwood
E. Trimco

2.17 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:
   A. Wood or Machine Screws: For the following:
      1) Strike plates to frames.
      2) Closers to doors and frames.
   B. Steel Through Bolts: For the following unless door blocking is provided:
      1) Surface hinges to doors.
      2) Closers to doors and frames.
      3) Surface-mounted exit devices.
3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.18 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
1. Replace construction cores with permanent cores as directed by Owner.
2. Furnish permanent cores to Owner for installation.

E. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

F. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

G. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
1. Do not notch perimeter gasketing to install other surface-applied hardware.

3.4 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: [Owner will engage] [Engage] a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended.

Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
3. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

3.8 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

3.9 DOOR HARDWARE SCHEDULE

Hardware Group 01 (*REV 1 Owner Comments 12-17-21)*

2	EA	Hinge	T4A3386 NRP 4 1/2" x 4 1/2" US32D	McKinney
1	EA	Hinge	T4A3386 QC12 4 1/2" x 4 1/2" US32D	*O.F.O.I.*
1	EA	Electrified Mortise Lock		*O.F.O.I.*
1	EA	Small Format Inter Core		*O.F.O.I.*
2	EA	Surface Closer	TB 1431 P10 EN	Sargent
1	EA	Threshold	273x3AFG 72 FHSL14	Pemko
1	EA	Gasketing	S88D	Pemko
1	EA	Sweep	18061CNB 36	Pemko
1	EA	Astragal	357SPTB	Pemko
1	EA	Card Reader		*Convergint/ATS*

Hardware Group 02

3	EA	Hinge	T4A3386 NRP 4 1/2" x 4 1/2" US32D	McKinney
1	EA	Mortise Lock	72 8204 LNP US32D	Sargent
1	EA	Small Format Inter Core	117P 7300B	Sargent
1	EA	Surface Closer	TB 1431 CPS EN	Sargent
1	EA	Threshold	273x3AFG 36 FHSL14	Pemko
1	EA	Gasketing	S88D 17'	Pemko
1	EA	Sweep	18061CNB 36	Pemko
1	EA	Latch Protector	325 US26D	Rockwood

Hardware Group 03 *(REV 1 Owner Comments 12-17-21)*

2	EA	Hinges	T4A3786 NRP 4 ½" x 4 ½" x 26D	McKinney
1	EA	Electrified Hinge	T4A3786 QC12 4 ½" x 4 ½" x 26D	*O.F.O.I.*
1	EA	Elec. Mortise Lock		*O.F.O.I.*
1	EA	SFIC	117P-7300B	*O.F.O.I.*
1	EA	Closer	TB1431 P10	Sargent
1	EA	Wall Stop	404 x 26D	Rockwood
1	EA	Door Bottom	411APKL 36"	Pemko
1	EA	*Card Reader*		*Convergint/ATS*

Hardware Group 04 *(REV 1 Owner Comments 12-17-21)*

2	EA	Hinges	T4A3786 NRP 4 ½" x 4 ½" x 26D	McKinney
1	EA	Electrified Hinge	T4A3786 QC12 4 ½" x 4 ½" x 26D	*O.F.O.I.*
1	EA	Elec. Mortise Lock		*O.F.O.I.*
1	EA	SFIC	117P-7300B	*O.F.O.I.*
1	EA	Closer	TB1431 P10	Sargent
1	EA	Door Bottom	411APKL 36"	Pemko
1	EA	*Card Reader*		*Convergint/ATS*

Hardware Group **05**

3	EA	Hinge	BB1199 4-1/2" x 4-1/2" US32D NRP	Hager
1	EA	Cylindrical Lock	3553 WTN US26D	Hager
1	EA	Wall Stop	404 US26D	Rockwood
1	EA	Gasketing	5050B 17'	NG
1	EA	Door Bottom	411APKL 36"	Pemko

Hardware Group **06**

3	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Latchset	8215 LNP 32D 1-5/8" lip strike	Sargent
1	SET	Gasketing	S773D 17'	Pemko
1	EA	Door Bottom	411APKL 36"	Pemko

Hardware Group **07**

3	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Latchset	8215 LNP 32D 1-5/8" lip strike	Sargent
1	EA	Wall Stop	404 x 26D	Rockwood
1	SET	Gasketing	S773D 17'	Pemko
1	EA	Door Bottom	411APKL 36"	Pemko

Hardware Group **08**

3	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Privacy Set	8265 LNP 32D 1-5/8" lip strike	Sargent
1	EA	Wall Stop	404 x 26D	Rockwood
1	SETS	Gasketing	S773D 17'	Pemko
1	EA	Door Bottom	411APKL 36"	Pemko

Hardware Group **09**

3	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Privacy Set	8265 LNP 32D 1-5/8" lip strike	Sargent
1	SETS	Gasketing	S773D 17'	Pemko
1	EA	Door Bottom	411APKL 36"	Pemko

Hardware Group **10**

3	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Lockset	72 8204 LNP 32D 1-5/8" lip strike	Sargent
1	EA	SFIC	117P-7300B	Sargent
1	Set	Gasketing	S773D 17'	Pemko
1	EA	Door Bottom	411APKL 36"	Pemko

Hardware Group **11**

3	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Lockset	72 8204 LNP 32D 1-5/8" lip strike	Sargent
1	EA	SFIC	117P-7300B	Sargent
1	EA	Wall Stop	404 x 26D	Rockwood
1	Set	Gasketing	S773D	Pemko
1	EA	Door Bottom	411APKL	Pemko

Hardware Group **12**

3	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Latchsets	8215 LNP 32D 1-5/8" lip strike	Sargent
1	EA	Wall Stops	404 x 26D	Rockwood
1	Set	Gasketing	S773D 17'	Pemko
1	EA	Door Bottoms	411APKL 36"	Pemko

Hardware Group **13**

2	EA	Hinges	FBB179 4 ½" x 4 ½" x 26D	Stanley
1	EA	Mortise Lockset	72 8204 LNP 32D 1-5/8" lip strike	Sargent
1	EA	SFIC	117P-7300B	Sargent
1	Set	Gasketing	S773D	Pemko
1	EA	Door Bottom	411APKL 36"	Pemko

END OF SECTION 087100

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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. Glass for doors.
2. Glazing sealants and accessories.

B. Related Requirements:
1. Division 8 Section "Fiberglass Windows" for glazing in fiberglass windows.
2. Division 8 Section “Flush Wood Doors” for wood doors to receive glass lites specified in this Section.
3. Division 8 Section “Steel Doors and Frames” for hollow metal doors and hollow metal frame to receive glazing specified in this Section.

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. IBC: International Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

E. Source Limitations for Glass: Obtain tinted float glass, coated float glass and insulating glass from single source and from single manufacturer for each glass type.

F. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. GANA Publications:
a. GANA's "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

H. Safety Glazing Labeling: Where safety glazing labeling is indicated (all tempered glass), permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or the manufacturer if acceptable to the authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

I. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E1300.
1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
2. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.
3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
   1. For monolithic-glass lites, properties are based on units with lites 6 mm thick unless specifically indicated otherwise.
   2. For laminated-glass lites, properties are based on products of construction indicated.
   3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
   4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
   5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
   6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.2 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. GANA Publications: "Glazing Manual."
   2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
   3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
   4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated (all tempered glass), permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
   1. Minimum Glass Thickness for Exterior Lites: 1 inch.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat- strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat- strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.3 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3.

2.4 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
   1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.

2. Spacer: Manufacturer's standard spacer material and construction.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

B. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Insulating-Glass Types" Article.

2.5 GLAZING SEALANTS

A. General:
1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
1. Products: Subject to compliance with requirements, unless specifically recommended in write by the grazing framing manufacturer provide one of the following:
a. BASF Building Systems; Omniseal 50.
b. Dow Corning Corporation; 995.
c. GE Advanced Materials - Silicones; UltraPruf II SCS2900.
d. May National Associates, Inc.; Bondaflex Sil 295.
e. Pecora Corporation; 898.
f. Polymeric Systems, Inc.; PSI-641.
g. Sika Corporation, Construction Products Division; SikaSil-C995.

2.6 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; non-staining and non-migrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.8 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
   1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
      a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

2.9 MONOLITHIC-GLASS TYPES

A. Glass Type GL-1 (locations as indicated on the Drawings, including interior relites, interior door sidelites, and inner entrance doors at entry vestibules): Clear fully tempered float glass.
   1. Thickness: ¼ inch.
   2. Provide safety glazing labeling.

2.10 INSULATING-GLASS TYPES

A. Glass Type GL-2 (at locations indicated on the Drawings, including exterior entrance doors): Clear fully tempered insulating glass.
   1. Overall Unit Thickness: 1- inch.
   2. Thickness of Each Glass Lite: ¼ inch.
   3. Outdoor Lite: Fully tempered float glass.
   4. Interspace Content: Argon.
   5. Indoor Lite: Fully tempered float glass.
   6. Provide safety glazing labeling.

B. Glass Type GL-3 (at locations indicated on the Drawings, including exterior glazed lites where safety glazing is not required): clear, insulating glass.
   1. Overall Unit Thickness: 1 inch.
   2. Thickness of Each Glass Lite:
      a. Outdoor Lite: ¼ inch.
      b. Indoor Lite: ¼ inch
   3. Outdoor Lite: Clear, float glass.
   4. Interspaces (two each) Content: Argon
   5. Indoor Lite: Clear, float glass.
   6. See Division 08 Section “Fiberglass Windows.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge

damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.
1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weather-tight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weather-tight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and

glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION

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. Interior gypsum board.

B. Related Requirements:
1. Division 7 Section “Building Insulation” for acoustical insulation used in conjunction with metal framed gypsum board wall and ceiling assemblies.
2. Division 9 Section "Ceramic Tile" for cementitious backer units installed as substrates for ceramic tile.

1.3 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

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

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

B. Gypsum Ceiling Board: ASTM C 1396/C 1396M.
1. Thickness: 1/2 inch.
2. Long Edges: Tapered.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
2. Shapes:
a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. Expansion (control) joint.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
1. Prefilling: At open joint and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping or drying-type, all-purpose compound.
a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use setting-type, sandable topping, or drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping, or drying-type, all-purpose compound.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

D. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
1. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

E. Thermal Insulation: As specified in Division 7 Section "Building Insulation."

F. Vapor Retarder: As specified in Division 7 Section "Building Insulation."

2.7 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.
1. Texture: Orange Peel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

J. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

K. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
1. Type X Gypsum Board: As indicated on Drawings.
2. Ceiling Type: Ceiling surfaces.
3. Moisture- and Mold-Resistant Type: At toilet room ceilings.

B. Single-Layer Application:
1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
   a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
   b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners.
2. Bullnose Bead: Use at outside corners.
3. LC-Bead: Use at exposed panel edges.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At all panel surfaces that will be exposed to view.

3.6 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.

C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

3.7 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

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END OF SECTION

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. Resilient base.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F .

1.5 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg. F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOSET-RUBBER BASE (RUBBER BASE)

A. Product Standard: ASTM F 1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
   1. Style and Location:
      a. Style B, Cove: Provide in areas to receive rubber base with resilient tile flooring and areas with carpeting.

B. Thickness: 0.125 inch.

C. Height: 4 inches unless indicated otherwise on Drawings.

D. Lengths: Coils in manufacturer's standard length.

E. Outside Corners: Job formed

F. Inside Corners: Job formed.

G. Colors: As indicated by manufacturer's designations on Drawings.

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until they are the same temperature as the space where they are to be installed.
1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners:
1. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
a. Miter or cope corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:
1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.
3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.
1. Apply two coat(s).

E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

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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 vinyl sheet flooring and rubber stair treads.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.
1. Engage an installer who employs workers for this Project who are trained or certified by resilient sheet flooring manufacturer for installation techniques required.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store resilient sheet flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store rolls upright.

1.8 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 85 deg F, in spaces to receive resilient sheet flooring during the following time periods:
1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during resilient sheet flooring installation.

D. Close spaces to traffic for 48 hours after resilient sheet flooring installation.

E. Install resilient sheet flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 UNBACKED VINYL SHEET FLOORING (SHEET VINYL)

A. Homogeneous Sheet Vinyl Flooring: See drawings

B. Overall Thickness: 0.079 inch.

C. Finish: Manufacturer's "ExoGuard™".

D. Wearing Surface: Smooth.

E. Sheet Width: 6.58 feet

F. Seamless-Installation Method: Heat welded.

G. Performance:
   1. Residual Indentation per ASTM F 1914: +/-0.007-inch
   2. Static Load Resistance per ASTM F 970: +/-0.005-inch.
   3. Flexibility per ASTM F 137: 1 -1/2 – inch.
   4. Chemical Resistance per ASTM F 926: Meets or exceeds requirements with no more that slight change in surface dulling, attack or staining.
   5. Resistance to Heat per ASTM F 1514: ΔE 8 or less.
   6. Resistance to Light per ASTM F 1515: ΔE 8 or less.
   7. Flame Spread per ASTM E 648: Class I.
   8. Smoke Evolution per ASTM E 662: 450 or less.
   9. Static Load Limit – Subjective Value per ASTM F 970: No visually apparent indentation, 2000 psi.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.

C. Seamless-Installation Accessories:
   1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
      a. Color: Match flooring.

D. Integral-Flash-Cove-Base Accessories:
   1. Cove Strip: 1-inch radius provided or approved by resilient sheet flooring manufacturer.
   2. Cap Strip: Square metal, vinyl, or rubber cap provided or approved by resilient sheet flooring manufacturer.
   3. Corners: Metal inside and outside corners and end stops provided or approved by resilient sheet flooring manufacturer.

E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient sheet flooring manufacturer. (Specified Product can be either polished or just washed and dried – Owner's preference).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient sheet flooring.

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

3.2 PREPARATION

A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.

B. Concrete Substrates: Prepare according to ASTM F 710.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient sheet flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
   4. Moisture Testing: Proceed with installation only after substrates pass testing according to resilient sheet flooring manufacturer's written recommendations, but not less stringent than the following:
      a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
      b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient sheet flooring until it is the same temperature as the space where it is to be installed.
   1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient sheet flooring.

B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.

C. Lay out resilient sheet flooring as follows:
   1. Maintain uniformity of flooring direction.
   2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
   3. Match edges of flooring for color shading at seams.

4. Avoid cross seams.

D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, and door frames.

E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install resilient sheet flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.

H. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

I. Integral-Flash-Cove Base: Cove resilient sheet flooring 6 inches (152 mm) up vertical surfaces. Support flooring at horizontal and vertical junction with cove strip. Butt at top against cap strip.
1. Install metal corners at inside and outside corners.

3.4 UNBACKED RUBBER SHEET FLOORING

A. Flexco
B. Product Standard: ASTM F 1859.
1. Type: Type I, homogeneous rubber sheet floor covering.
2. Thickness: As standard with manufacturer
3. Hardness: Not less than required by ASTM F 1859
C. Wearing Surface: Molded pattern.
1. Molded-Pattern Figure: Raised discs
D. Sheet Width: 4.0 feet (1.2 m)
E. Seamless-Installation Method: Heat welded
F. Colors and Patterns: As indicated on the finish schedule in the drawings

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.

B. Perform the following operations immediately after completing resilient sheet flooring installation:
1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient sheet flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, adhesive, and blemishes from flooring surfaces before applying liquid floor polish.
1. Apply three coats.

E. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION

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. Related Requirements:

1. Section 024119 "Selective Demolition" for removing existing floor coverings.
2. Section 096513 "Resilient Base and Accessories"

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics and durability.
2. Include manufacturer's written installation recommendations for each type of substrate.

B. Shop Drawings: For carpet installation, showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
2. Carpet type, color, and dye lot.
3. Locations where dye lot changes occur.
4. Seam locations, types, and methods.
5. Type of subfloor.
6. Type of installation.
7. Pattern type, repeat size, location, direction, and starting point.
8. Pile direction.
9. Types, colors, and locations of insets and borders.
10. Types, colors, and locations of edge, transition, and other accessory strips.
11. Transition details to other flooring materials.
12. Type of carpet cushion.

C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet: 12-inch- (300-mm-) square Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- (300-mm-) long Samples.
3. Carpet Seam: 6-inch (150-mm) Sample.
4. Mitered Carpet-Border Seam: 12-inch- (300-mm-) square Sample. Show carpet pattern alignment.

D. Samples for Initial Selection: For each type of product.

1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.

E. Product Schedule: For carpet. Use same designations indicated on Drawings.

F. ~~Sustainable Product Certification Provide ANSI/NSF 140 certification for carpet products.~~ (*REV 1 Owner Comments 12-17-21)*

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

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

C. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet: Full-width rolls equal to **5** percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockups at locations and in sizes shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

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

B. Deliver carpet in original mill protective covering with mill register numbers and tags attached.

1.9 FIELD CONDITIONS

A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.

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

1.10 WARRANTY

A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, the following:

a. More than 10 percent loss of face fiber, edge raveling, snags, and runs.
b. Loss of tuft bind strength.
c. Excess static discharge**.**
d. Delamination.

3. Warranty Period: **10** years from date of Substantial Completion.

B. Special Warranty for Carpet Cushion: Manufacturer agrees to repair or replace components of carpet cushion installation that fail in materials or workmanship within specified warranty period.

1. Warranty includes removal and replacement of carpet and accessories required by replacement of carpet cushion.
2. Warranty does not include deterioration or failure of carpet cushion due to unusual traffic, failure of substrate, vandalism, or abuse.
3. Failure includes, but is not limited to, permanent indentation or compression.
4. Warranty Period: **10** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TUFTED CARPET

A. Shaw Contract

B. Color: See finish schedule in drawings

C. Pattern: See finish schedule in drawings

D. Fiber Content: Nylon

E. Fiber Type: Nylon

F. Pile Characteristic: Multilevel-loop pile.

G. Density: Average 5425 oz./cu. yd. (0.291g/cu. cm).

H. Pile Thickness: 0.145 inches (3.71mm) for finished carpet according to ASTM D 6859.

I. Stitches: 10.5 per inch (42.5 10cm).

J. Gage: 1/10 inch (3.94 per 10 cm).

K. Face Weight: 22 oz./sq. yd. (745.9g/sq. m).

L. Primary Backing: Synthetic

M. Secondary Backing: Ultraloc

N. Backcoating: Manufacturer's standard material

O. Roll Width: 12 feet (3.7 m)

P. Applied Treatments:

1. Applied Soil-Resistance Treatment: Manufacturer's standard material

Q. Performance Characteristics:

1. Appearance Retention Rating: Moderate traffic, 2.5 minimum according to ASTM D 7330.
2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D 2646.
4. Tuft Bind: Not less than 3 lbf (13 N) according to ASTM D 1335.
5. Delamination: Not less than 4 lbf/in. (.07 N/mm) according to ASTM D 3936.
6. Noise Reduction Coefficient (NRC): 0.15 NRC according to ASTM C 423.
7. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
8. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
9. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.

2.2 WALK-OFF CARPET

A. Shaw Contract

B. Color: As indicated on finish schedule in drawings

C. Pattern: As indicated on finish schedule in drawings

D. Fiber Content: Polyester

E. Face Construction: Needlebond Hobnail

F. Pile Characteristic: Level-loop pile.

G. Density: 6504 per cu. yd. (0.241g/cu. cm).

H. Pile Thickness: 0.379 inches (9.63mm) for finished carpet according to ASTM D 6859.

I. Face Weight: 49.5 oz./sq. yd. (1,678.33g/sq. m)>.

J. Backing: Manufacturer's standard

K. Applied Treatments:

1. Applied Soil-Resistance Treatment: Manufacturer's standard material

L. Performance Characteristics:

1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D 2646.
4. Noise Reduction Coefficient (NRC): 015 NRC according to ASTM C 423.
5. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
6. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
7. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by **carpet** manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by **carpet manufacturer**.

C. Tackless Carpet Stripping: Water-resistant plywood, in strips as required to match cushion thickness and that comply with CRI's "CRI Carpet Installation Standard."

D. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

E. Metal Edge/Transition Strips: Extruded aluminum with **mill** finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance.

B. Examine carpet for type, color, pattern, and potential defects.

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

1. Moisture Testing: Perform tests so that each test area does not exceed **200 sq. ft. (18.6 sq. m)**, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

    a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m)** in 24 hours.
    b. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum **75** percent relative humidity level measurement.
    c. Perform additional moisture tests recommended in writing by **adhesive and carpet**[**adhesive,** manufacturers. Proceed with installation only after substrates pass testing.

D. Wood Subfloors: Verify the following:
1. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI's "CRI Carpet Installation Standard" and with carpet manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm), unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by **adhesive and carpet** manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 CARPET INSTALLATION

A. Comply with CRI's "CRI Carpet Installation Standard" and **carpet manufacturer's** written installation instructions for the following:

1. Direct-glue-down installation.
2. Double-glue-down installation.
3. Preapplied adhesive installation.

B. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.

C. Install **pattern parallel to walls and borders**.

D. Install borders with mitered corner seams.

E. Do not bridge building expansion joints with carpet.

F. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

G. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet as marked on subfloor. Use nonpermanent, nonstaining marking device.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
2. Remove yarns that protrude from carpet surface.
3. Vacuum carpet using commercial machine with face-beater element.

B. Protect installed carpet to comply with CRI's "CRI Carpet Installation Standard."

C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods recommended in writing by carpet manufacturer **and carpet adhesive manufacturer**.

END OF SECTION 096816

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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 DEFINITIONS

A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
3. VOC content.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials[, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint: 5 percent, but not less than 1 gallon of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Behr Process Corporation.
2. Benjamin Moore & Co.
3. Cloverdale Paint.
4. Dunn-Edwards Corporation.
5. PPG Architectural Finishes, Inc.
6. Rodda Paint Co.
7. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Primers, Sealers, and Undercoaters: 200 g/L.
4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.

D. Colors: As indicated on the Drawings.

2.4 PRIMERS/SEALERS

A. Primer Sealer, Latex, Interior: MPI #50.

B. Primer Sealer, Alkyd, Interior: MPI #45.

2.5 METAL PRIMERS

A. Primer, Rust-Inhibitive, Water Based: MPI #107.

B. Primer, Galvanized, Water Based: MPI #134.

2.6 WATER-BASED PAINTS

A. Latex, Interior, Semi-Gloss, (Gloss Level 5): MPI #54.

2.7 SOLVENT-BASED PAINTS

A. Alkyd, Interior, Gloss (Gloss Level 6): MPI #48.

2.8 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Gypsum Board: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sandedsmooth. Apply orange peel texture.

D. Spray-Textured Ceiling Substrates: Verify that surfaces aredry.

E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces andconditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer. but not less than the following:
1. SSPC-SP 3, "Power Tool Cleaning."

G. Shop-Primed Steel Substrates and Steel Substrates with Existing Paint Finish: Clean field welds, bolted connections, and abraded areas of shop or existing paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in occupied spaces:
   a. Equipment, including panelboards.
   b. Uninsulated metal piping.

c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
h. Other items as directed by Architect.

2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Non-traffic Surfaces:
1. Latex System:
   a. Prime Coat: Primer sealer, latex, interior, MPI #50.
   b. Intermediate Coat: Latex, interior, matching topcoat.
   c. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5), MPI #54.

B. Concrete Substrates, Traffic Surfaces:
1. Water-Based Clear Sealer System:
   a. First Coat: Sealer, water based, for concrete floors, MPI #99.
   b. Topcoat: Sealer, water based, for concrete floors, MPI #99.

C. Steel Substrates:
1. Latex over Alkyd Primer System:
   a. Prime Coat: Shop primer specified in Section where substrate is specified.
   b. Intermediate Coat: Latex, interior, matching topcoat.
   c. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5), MPI #54.

D. Galvanized-Metal Substrates:
1. Latex over Waterborne Primer System:
   a. Prime Coat: Primer, galvanized, water based, MPI #134.
   b. Intermediate Coat: Latex, interior, matching topcoat.
   c. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5), MPI #54.

E. Gypsum Board Substrates:
1. Latex System:
   a. Prime Coat: Primer sealer, latex, interior, MPI #50.
   b. Prime Coat: Latex, interior, matching topcoat.

c. Intermediate Coat: Latex, interior, matching topcoat.
d. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5), MPI #54.

2. Alkyd System:
   a. Prime Coat: Primer sealer, alkyd, interior, MPI #45.
   b. Intermediate Coat: Alkyd, interior, matching topcoat.
   c. Topcoat: Alkyd, interior, gloss (Gloss Level 6), MPI #48.

END OF SECTION

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. Public-use washroom accessories.
2. Under-lavatory guards.
3. Custodial accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
1. Identify locations using room designations indicated.
2. Identify products using designations indicated.

CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.8 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.

B. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and- theft resistant where exposed, and of galvanized steel where concealed.

C. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

D. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
1. A & J Washroom Accessories, Inc.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
6. Tubular Specialties Manufacturing, Inc.

B. Paper Towel (Roll) Dispenser
1. Basis-of-Design Product: Model B-72860 Surface Mounted Roll Paper Towel Dispenser as manufactured by Bobrick Washroom Equipment, Inc.
2. Description: Touch free pull actuated mechanism permits controlled delivery of paper rolls in 12-inch lengths.
3. Mounting: Surface mounted.
4. Minimum Capacity: 8-inch- wide, 800-foot- long roll plus 3 ½-inch stub roll with automatic transfer.
5. Material and Finish: Translucent plastic.
6. Lockset: Tumbler type.

C. Recessed Dual-Roll Toilet Tissue Dispenser with Hoods:
1. Basis-of-Design Product: Model B-6997.60 Recessed Dual-Roll Toilet Tissue Dispenser with Hoods as manufactured by Bobrick Washroom Equipment, Inc.
2. Description: Recessed dual-roll toilet tissue dispenser with hoods shall be type -304 stainless steel with satin finish. Shall and flange shall be drawn and beveled, one piece seamless construction. Unit shall be equipped with 18-gauge hoods hinged to shell and furnished with plate steel mounting clamp for installation in stud walls. Theft resistant spindles shall be chrome plated with heavy internal springs removable only with special key provided.
3. Mounting: Recessed.

D. Waste Receptacle:
1. Basis-of-Design Product: Model B-275 Surface Mounted Waste Receptacle as manufactured by Bobrick Washroom Equipment, Inc.
2. Description: Satin-finish stainless steel> Bottom edges hemmed. Hooks hold furnished reusable vinyl liner, removable for servicing.
3. Mounting: Open top, surface mounted.
4. Minimum Capacity: 20 gal.
5. Material and Finish: Stainless steel, No. 4 finish (satin)

E. Liquid-Soap Dispenser:
1. Basis-of-Design Product: Model B-2112 Surface Mounted Waste Receptacle as manufactured by Bobrick Washroom Equipment, Inc.
2. Description: Designed for dispensing soap in liquid or lotion form, concealed wall fastening, hinged filler top requires special key to open, push button operation.
3. Mounting: Horizontally oriented, surface mounted.
4. Capacity: 40 fl. oz.
5. Materials:

a. Container18-88 type 304 stainless steel with satin finish, drawn one piece seamless body construction. Back plate with mounting bracket attached. Clear acrylic soap re-fill indicator window.
b. Valve: Black molded plastic push button and spout. Soap head holding mushroom valve, stainless steel spring, U-packing seal and duckbill. Antibacterial soap resistant cylinder.

F. Grab Bars:
1. Basis-of-Design Products:
a. Two Toilet Compartment Grab Bar: Model B-68137.99 Two-Wall Tub/Shower Toilet Compartment Grab Bar Preened as manufactured by Bobrick Washroom Equipment, Inc.
b. Vertical Grab Bar: Model B-6806.99 x 24 Straight Grab Bar Preened as manufactured by Bobrick Washroom Equipment, Inc.
2. Descriptions:
a. Two Toilet Compartment Grab Bar: 36"W by 54" D, 1-1/2-inch diameter grab bar with preened finish. Constructed of 18 gauge type 304 satin finish stainless steel tubing. Concealed mounting flanges 1/8-inch thick, type 304 stainless steel plate 2-inches W by 3 1/8-inches H, with screw holes for concealed anchors. Cover shall be 22 gauge type 304 stainless steel with satin finish, 3 ¼- inches diameter. Cover snaps over mounting flange to conceal screws.
b. Vertical Grab Bar: 24-inches long, 1 ½-inch diameter tubing, preened finish. Constructed of 18 gauge type 304 satin finish stainless steel tubing. Concealed mounting flanges 1/8-inch thick, type 304 stainless steel plate 2-inches W by 3 1/8-inches H, with screw holes for concealed anchors. Cover shall be 22 gauge type 304 stainless steel with satin finish, 3 ¼-inches diameter. Cover snaps over mounting flange to conceal screws.

G. Sanitary-Napkin Disposal Unit:
1. Basis-of-Design Product: Model B-270 ConturaSeries® Surface-Mounted Sanitary Napkin Disposal as manufactured by Bobrick Washroom Equipment, Inc.
2. Description: 7 ½-inch W by 10 inches H, 3 13/16-inches D, sanitary napkin dispenser with drawn cover, one piece construction, secured to cabinet with full length stainless steel piano hinge
3. Mounting: Surface mounted.
4. Receptacle: Removable.
5. Material and Finish: Stainless steel, No. 4 finish (satin).

H. Mirror Unit:
1. Basis-of-Design Product: Series B-165 Mirror with Channel.
2. Description: No. 1 quality, ¼-inch thick glass mirror, with galvanized steel back, concealed wall hanger with theft resistant mounting.
3. Frame: One piece, type 304 stainless-steel channel with bright polished finish.
a. Corners: Mitered
4. Size: As indicated on Drawings.

2.3 UNDERLAVATORY GUARDS

A. Underlavatory Guard
1. Basis-of-Design Product: Subject to compliance with requirements, provide Truebro by IPS Corporation or a comparable product by one of the following:
a. Plumberex Specialty Products, Inc.
b. Buckaroos, Inc.
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded plastic, white.

2.4 CUSTODIAL ACCESSORIES

A. Mop and Broom Holder (Mop Holder):
   1. Description: Unit with holders,.
   2. Length: 36 inches.
   3. Mop/Broom Holders: Four, spring-loaded, rubber hat, camtype.
   4. Material and Finish: Stainless steel, No. 4 finish(satin).

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's Representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION

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. Fire-protection cabinets for the following:
      a. Portable fire extinguishers.

B. Related Requirements:
   1. Division 10 Section "Fire Extinguishers."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semi-recessed-, or surface- mounting method and relationships of box and trim to surrounding construction.

B. Samples: For each type of exposed finish required.

1.4 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall surface provided.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

2.2 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

B. Fire Extinguisher Cabinet Basis of Design: Subject to requirements provide Ambassador 1013V10 Surface Mounted Cabinet as manufactured by JL Industries, Inc. or comparable product by one of the following:
   1. American Specialties, Inc.
   2. Fire-End & Croker Corporation.
   3. Guardian Fire Equipment, Inc.
   4. Kidde Residential and Commercial Division.
   5. Larsens Manufacturing Company.
   6. Modern Metal Products, Division of Technico Products
   7. Nystrom, Inc.

C. Cabinet Construction: Nonrated.

D. Cabinet Tub Material: Cold-rolled steel sheet.

E. Surface-Mounted Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.

F. Door Material: Stainless-steel sheet.

G. Door Style: Vertical duo panel. with no exposed hinges.

H. Door Glazing: Acrylic sheet.
1. Acrylic Sheet Color: Clear transparent acrylic sheet.

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
1. Provide projecting lever handle with cam-action latch.
2. Provide concealed hinge permitting door to open 180 degrees.

J. Accessories:
1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate in manufacturer’s standard location.
   a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER"
      1) Location: Applied to cabinet door.
      2) Application Process: Silk-screened.
      3) Lettering Color: Black.
      4) Orientation: Vertical.
4. Alarm: Manufacturer's standard alarm that actuates when fire-protection cabinet door is opened and that is powered by batteries.

K. Materials:
1. Cold-Rolled Steel: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
   a. Finish: Baked enamel or powder coat.
   b. Color: White.
2. Stainless Steel: ASTM A 666, Type 304.
   a. Finish: No. 4 directional satin finish.
3. Transparent Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), minimum 1.5 mm thick, with Finish 1 (smooth or polished).

2.3 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
1. Weld joints and grind smooth.
2. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

2.4 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.

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

3.2 PREPARATION

A. Examine fire extinguisher cabinet locations to verify that sufficient clear wall surface is available at proposed location. Coordinate position of fire extinguisher cabinet with adjacent wall mounted electrical or mechanical equipment. Provide all required blocking in wall for support of fire extinguisher cabinet.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights indicated below:
1. Fire-Protection Cabinets: 54 inches above finished floor to top of cabinet.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
1. Unless otherwise indicated, provide recessed fire-protection cabinets
2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Identification: Apply vinyl lettering at locations indicated.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory- finished appearance. Use only materials and procedures recommended or furnished by fire- protection cabinet and

mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

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 portable fire extinguishers and mounting brackets for fire extinguishers].

B. Related Requirements:
1. Division 10 Section "Fire Protection Cabinets" for fire extinguisher cabinets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

1.4 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Manufacturers; The same manufacturer used for fire extinguisher cabinets specified in Division 10 Section Fire Protection Cabinets.

B. Fire Extinguishers: Type, size, and capacity for each fire extinguisher cabinet (FEC) and fire extinguisher (FE) indicated on the Drawings..
1. Valves: Manufacturer's standard.
2. Handles and Levers: Manufacturer's standard.
3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

C. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.3 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black

baked-enamel finish.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate in manufacturer standard location.
   1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
      a. Orientation: Horizontal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.
   1. Remove and replace damaged, defective, or undercharged fire extinguishers.

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

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
   1. Mounting Brackets: 54 inches above finished floor to top of fire extinguisher.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION

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. Special Systems

1.3 Contract with Kenaitze's preferred vendors Integrated Communications Designs, Convergint Technologies and incorporate their construction schedules into the overall project construction schedule. See ICD and Convergint Technologies special systems proposal for additional information relating to the vendor provided scope of work and materials to provide complete and operable special systems package.

A. See Appendix A – Convergint Technologies LLC Badge Reader Proposal

B. See Appendix B – ICD Audio Visual for Offsite Proposal

C. See Appendix C – ICD Camera Design Layout

END OF SECTION

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Proposal for Kenaitze Indian Tribe

Proposal Name: **Rev 1 - KIT - Tribal Court Remodel and Upgrades** **Date: 11-23-2021**

To: James Rendle
Company: Kenaitze Indian Tribe
Phone: 907-335-7276
email: JRendle@kenaitze.org

From: Josh Olds
Company: ATS Alaska
Phone: 907-317-1633
email: jolds@atsalaska.com

Scope: ATS to provide, program and commission an (8) door Access Control Addition per Tribal Court 6302021 and drawing set stamped 06/04/2021 and acknowledges addendum(s) (NA).

☐ **(8) Lenel Access Control Door Addition: $26,308.**

BOM	ACS	
Manufacturer	Description	Quantity
Lenel	Intelligent Dual Reader Controller	1
Lenel	Dual Reader Interface Module	3
Altronix	Trove3 enclosure with Mercury backplane	1
Altronix	12VDC @ 10A power supply	1
Altronix	24VDC @ 10A power supply	1
Altronix	Power distribution module 8 PTC outputs	2
Altronix	Power controller with fire alarm interface, 8 fuse protected outputs	2
HID	Full Sized Reader, Terminal Strip, Standard profile	6
HID	Full Sized Keypad Reader, Terminal Strip, Standard profile	2
Bosch	PIR Request to Exit WITH TP160 PLATE	8
GRI	Recessed door contact, DPDT, 1", 1/2" gap, White	8
Camden	Sequencers	2
SpaceAge	Mini Battery Cabinet	1
POS	Battery, 12V 7AH	3

Contractor/Owner to Provide the following:

- 120V Power for each Headend Location
- Cable, Cabling,
- Installation and Termination of ATS Provided Devices and Materials
- Rack and Rack space
- Wall Space
- Sequence of Operations and door hardware schedule for access-controlled doors developed
- Door Hardware, both electrified and non-electrified
- Naming Convention developed
- Scheduling, Site Access (Escort), Site Contact Information
- Owner's IT contact information, IP addresses, ports, POE switches, gateways, and other IT Support, Network configuration information

Remarks:

- Includes one-line and ATS Alaska System drawing set.
- Includes COVID testing upon/prior to arrival in Kenai.
- Includes (1)-dedicated trip prior to electrical rough-in to work with the Owner to determine final mounting locations of ATS Devices.
- Includes door system testing

Exclusions (unless specifically included in the remarks section above, the following standard exclusions apply)**:**

- Fire Alarm, Fire, fire/smoke or smoke dampers; elevator shaft exhaust vents; and sprinkler monitoring switches.
- Permits/review fees, bonds, taxes (unless itemized above with base bid), fire watch, demolition, asbestos abatement, providing high lift devices, cutting/patching/painting, phone line for modem, development of auto-cad floor plans (usually available from architect or consultant).
- Installation, Cable, Cabling, Electrical
- CAD, Floorplan Generation
- Work outside of normal business hours, Weather Delays, Standby Time
- Contractor/Owner Provided Items
- Material/Hardware not listed in the Bill of Materials (BOM).
- System Integration to other any other systems i.e. Fire Alarm, Elevators, etc.
- License upgrades/updates. Proposed separately.
- Intrusion Detection. None requested at this time.

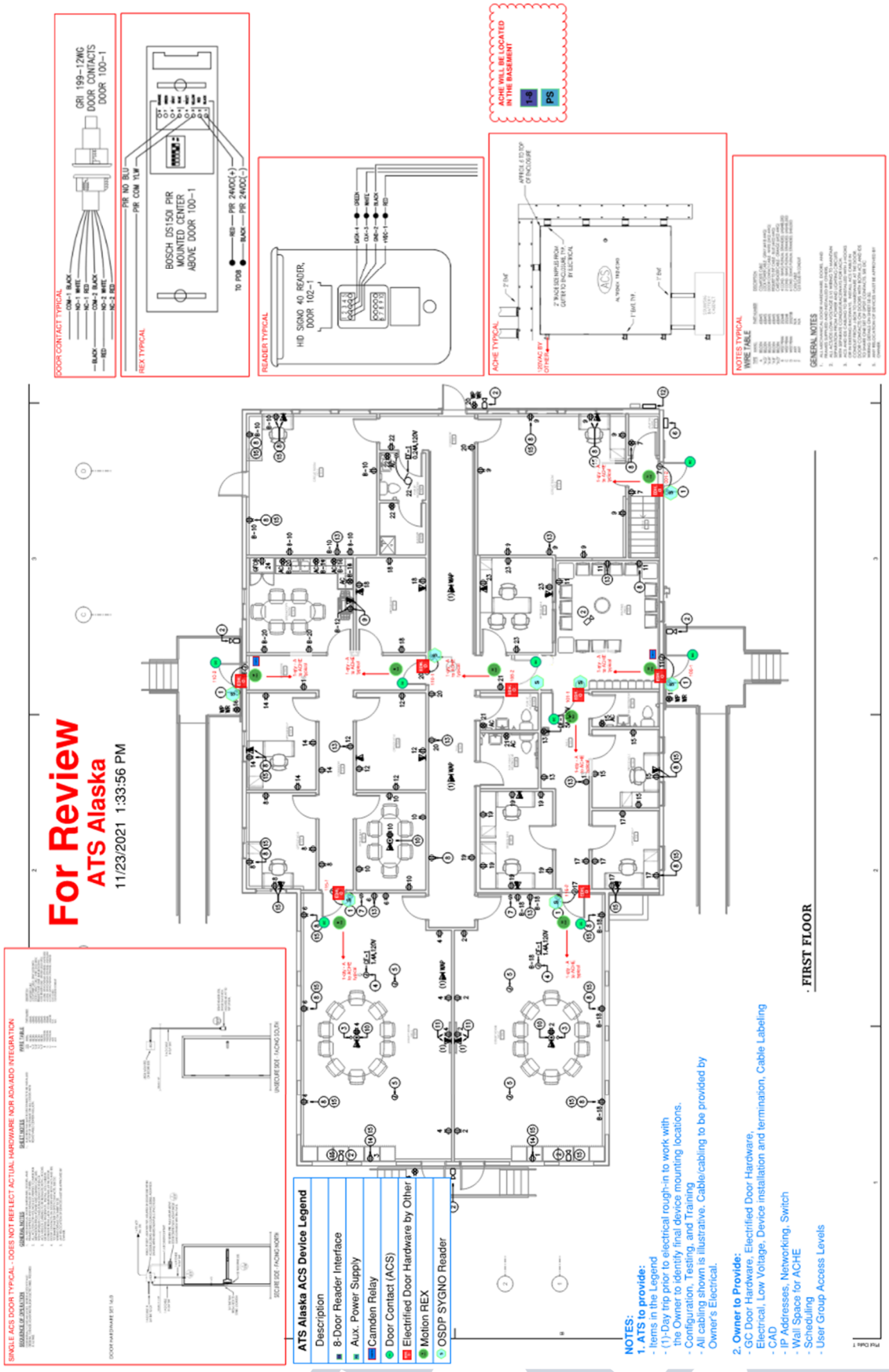
Proposal for Kenaitze Indian Tribe

General Terms & Conditions:

- Price valid for **30** days from date of quote.
- Price does not include applicable tax(es).
- Standard warranty 1-year programming. Warranty takes effect upon substantial completion defined as beneficial use of the system. Excludes acts of God, or damage or programming changes caused by others, etc.
- Price is based on the Owner provided description. Additional work will be done on a Time and Material Basis at a rate of $165 per hour per tech plus material costs.
- Subject to the "ATS Project Terms and Conditions" version October 2018.
- Due to Covid-19, working consecutive hours/days may not be feasible. ATS Alaska excludes any liability for project/schedule delays due in any part to Covid-19.
- Due to Covid-19, supply chains are experiencing delays. ATS Alaska excludes any liability for project/schedule delays due in any part to shipping delays and material delivery delays outside of ATS Alaska's control.
- If quarantine is required prior to starting work on site, a charge of $1658. per day per tech will be applied.
- All documents compiled for the purpose of this proposal represent ATS Alaska intellectual property and are confidential. These documents may not be shared, in part or in whole, other than to the intended party, Kenaitze Indian Tribe.
- A mobilization fee of 25% of the Total Sum selected above will be invoiced upon award of project.
- Project will be invoiced monthly based on %-complete.
- Payment Terms, Net 30.

If a contract or purchase order will be issued for this scope of work, please reference this proposal in the contract documents OR sign the proposal below authorizing us to proceed. Thank you for your consideration.

Proposal Submitted by:	JOlds	Proposal accepted by (signature):	
Name:	Josh Olds	Name (print):	
Title:		Title:	
Date:	11-23-2021	Date:	


For Review
ATS Alaska
11/23/2021 1:33:56 PM
FIRST FLOOR
ATS Alaska ACS Device Legend
Description
8-Door Reader Interface
Aux. Power Supply
Camden Relay
Door Contact (ACS)
Electrified Door Hardware by Other
Motion REX
OSDP SYGNO Reader
NOTES:
1. ATS to provide:
- Items in the Legend
- (1)-Day trip prior to electrical rough-in to work with the Owner to identify final device mounting locations.
- Configuration, Testing, and Training
- All cabling shown is illustrative. Cable/cabling to be provided by Owner's Electrical.
2. Owner to Provide:
- GC Door Hardware, Electrified Door Hardware,
Electrical, Low Voltage, Device installation and termination, Cable Labeling
- CAD
- IP Addresses, Networking, Switch
- Wall Space for ACHE
- Scheduling
- User Group Access Levels

Integrated Communication Designs Inc.
PO BOX 111551
Anchorage, AK 99511 US
(907) 868-3321
www.icdalaska.com

Estimate

ADDRESS

Kenaitze Indian Tribe
ATTN: Peter McCaslin
150 N. Willow St.
Kenai, AK 99611
Office: 907-335-7646
Cell: 907-268-8447

ESTIMATE # 2940
DATE 07/12/2021
EXPIRATION DATE 07/26/2021

ACTIVITY	QTY	RATE	AMOUNT
Project Summary: To install a network camera system to provide basic two-way audio/visual communication and recording between three separate rooms (Courtroom 1, Courtroom 2, and an offsite location.) SCOPE OF WORK TO PROCURE AND: - Install (3) 5MP wall/ceiling mount network cameras with IR for (2) courtrooms and (1) offsite location (to be installed with wall mounts and junction boxes) - Install (3) SD cards (65GB) for redundant backup recordings - Install (3) Surge protectors - Install (3) Lenovo Micro desktops to provide two-way audio and video recordings for (2) courtrooms and (1) offsite location - Install (3) Wireless keyboards and (3) wireless mice - Install (3) Yamaha (MusicCast BAR 400) sound bars with wireless subwoofers to be wall mount for (2) courtrooms and (1) offsite location - Install and configure Vivotek Vast software on (3) Lenovo Micro desktops - Install customer provided (2) 65" TV displays with (2) customer provided TV wall mounts for (2) courtrooms - Configure, test, and commission CCTV system - User on-boarding and training			
Equipment/Materials Cost	1	9,412.65	9,412.65
Labor	1	5,560.00	5,560.00
Travel Expenses - Travel from Anchorage to Kenai round-trip - Per diem - Hotel Accommodations - Mileage (310 miles per round-trip)	1	2,990.50	2,990.50

EXCLUSIONS

- Cost incurred due to delays by others

CLARIFICATIONS/ASSUMPTIONS

- TV's and wall mounts to be provided by others- All work not mentioned in this proposal will result in a change order.
- All network cabling is to be installed by others (request 3 ports per room, 1 for the

Thank you for your continued business!

ACTIVITY	QTY	RATE	AMOUNT

camera and 2 behind the TVs).
- Any additional work unforeseen, requested, or not listed in this proposal will be billed on final invoice at our preferred customer rate of $95/hr. ($142.50/hr. for OT)
- Labor includes all travel expenses (i.e., lodging, travel, per diem, fuel, etc.)
- Any travel delays (i.e., weather, etc.) ICD, Inc. will bill at a standard rate of $95/hr.
- Wireless keyboards/mouses to be located within 30' of desktops/TVs
- Offsite location TV has been installed.
- Any power requirements to be completed by others.

NOTE
- Once you have provided your approval we will need to obtain payment for equipment/shipping prior to placing the order.
- Once we have received the equipment we will schedule the installation.
- We require payment for labor due on receipt

This estimate has been prepared in reliance upon a preliminary evaluation of the project plans and any additional documentation the client has furnished or made available to ICD. In the event conditions are encountered on the project site which differ materially from those reasonably anticipated in the preparation of this estimate or which otherwise constitute unknown physical conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for herein and which in any way impact either the scope of work or cost associated with the project, ICD shall be entitled to adjust the total proposed cost to include all actual costs incurred on the project, plus a reasonable markup for overhead and profit.

Confidentiality Statement:
The information contained in this document and all attachments hereto are intended to be confidential, privileged, and are for the sole use of the intended recipient. Any retention, dissemination or distribution of this communication and any attachments is strictly prohibited.

TERMS & CONDITIONS:
The signer of this estimate states that he/she is representing the company who is purchasing the labor, materials/equipment, and further agrees to the following conditions: that this equipment/materials used on the work will remain the property of Integrated Communication Designs Inc. (ICD, Inc.) until paid in full and that ICD, Inc. can enter upon the property where said equipment/materials is located and repossess without legal action against ICD, Inc. The signer of this estimate states that he/she has carefully reviewed and approved the above order, and guarantees to accept this order on delivery and pay the balance due. The signer of this estimate states that he/she understands that no verbal agreement can be recognized.

TOTAL **$17,963.15**

Accepted By

Accepted Date

Thank you for your continued business!

For Review

ATS Alaska

11/23/2021 1:33:56 PM

SINGLE ACS DOOR TYPICAL - DOES NOT REFLECT ACTUAL HARDWARE NOR ADA/ADO INTEGRATION

SEQUENCE OF OPERATION

DOOR NORMALLY CLOSED AND LOCKED. EXTERIOR ACCESS WITH VALID CREDENTIAL TO READER. MOMENTARILY RELEASING ELECTRIC STRIKE. REED EGRESS OF ALL TIMES.

GENERAL NOTES

1. ALL MECHANICAL DOOR HARDWARE, DOORS, AND FRAMES SUPPLIED AND INSTALLED BY OTHERS.
2. ACS/IDS LOW-VOLTAGE (LV) WIRING TO MAINTAIN SEPARATION FROM POWER AND LIGHTING CIRCUITS WITH SEPARATE CONDUIT/RACEWAYS FOR EACH.
3. ACS AND IDS CABLING TO BE INSTALLED WITH J-HOOKS OR IN EXISTING RACEWAYS. INSTALL ACS CABLE IN CONDUIT FROM J-BOX TO HARDWARE AT THE DOOR.
4. DOOR CONTACTS ON DOORS WITH BOTH ACS AND IDS TO SHARE ONE SET OF DPDT CONTACTS. SEE DC WIRING DETAILS ON SHEET SE-32.
5. ANY RELOCATION OF DEVICES MUST BE APPROVED BY OWNER.

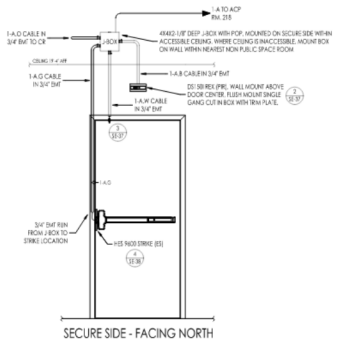
SHEET NOTES

1. ELECTRICAL TYP. QUICK DISCONNECTS TO BE INSTALLED AT TOP OF THE FRAME ON ALL DOORS WITH REMOVABLE CENTER MULLION.

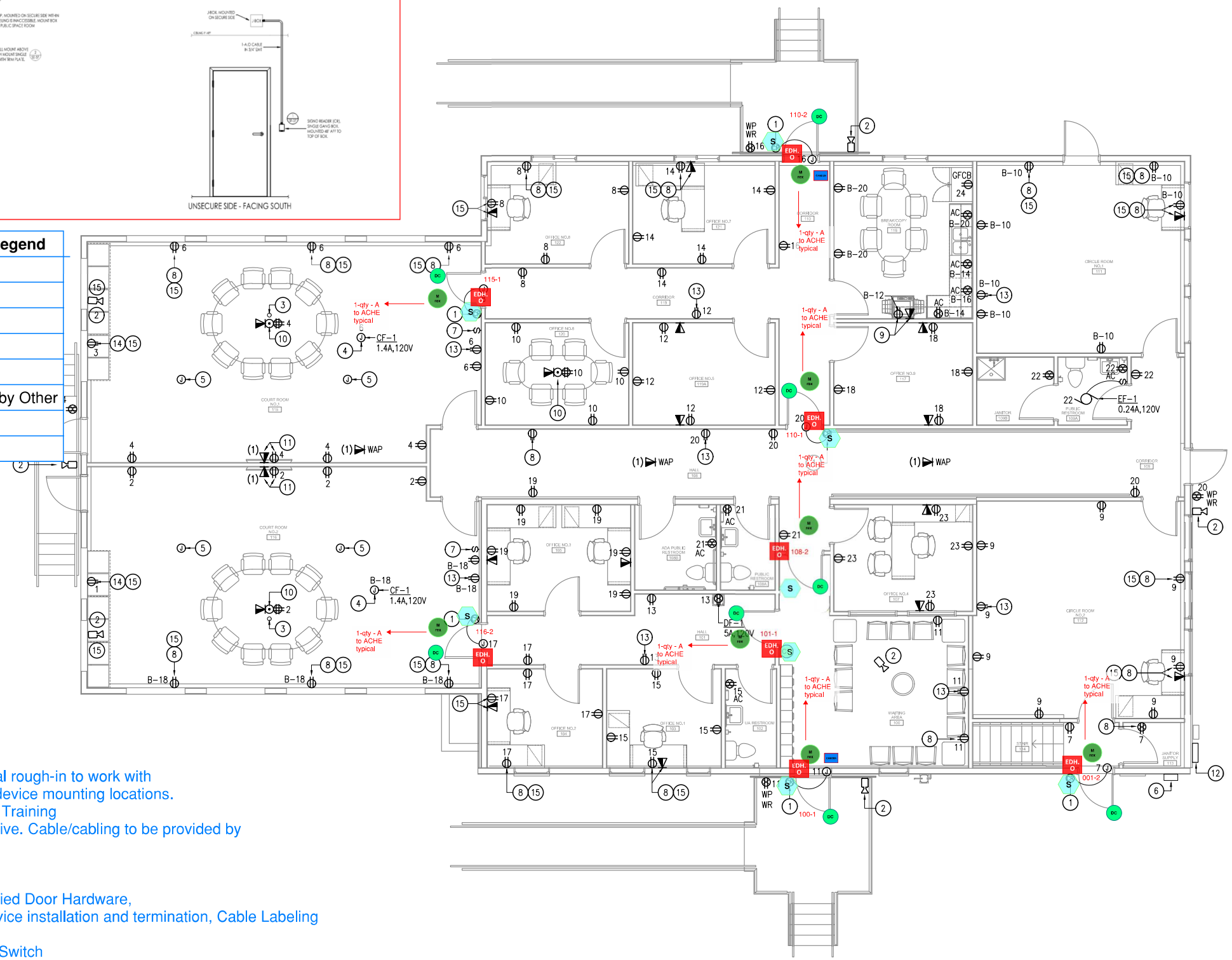
WIRE TABLE

TYPE	MANU.	PART NUMBER	DESCRIPTION
A	BELDEN	6584FS	COMPOSITE CABLE
"A.G"	BELDEN	6584FS	LOCK POWER CABLE - GRAY (#18 AWG)
"A.W"	BELDEN	6584FS	DOOR CONTACT CABLE - WHITE (2#22 AWG)
"A.B"	BELDEN	6584FS	REQUEST TO EXIT CABLE - BLUE (4#22 AWG)
"A.O"	BELDEN	6584FS	CARD READER CABLE - ORANGE (6#22 AWG)
B	WEST PENN	25244B	4 COND. 18AWG PLENUM, STRANDED, UNSHIELDED
C	WEST PENN	25224B	2 COND. 18AWG PLENUM, STRANDED, UNSHIELDED
D	WEST PENN	25327B	6 COND. 22AWG PLENUM, STRANDED, SHIELDED
E	ANY	N/A	CAT6 CABLE
F	ANY	N/A	12/3 SOLID IN CONDUIT

DOOR HARDWARE SET 16.0



ATS Alaska ACS Device Legend
Description
8-Door Reader Interface
Aux. Power Supply
Camden Relay
Door Contact (ACS)
Electrified Door Hardware by Other
Motion REX
OSDP SYGNO Reader



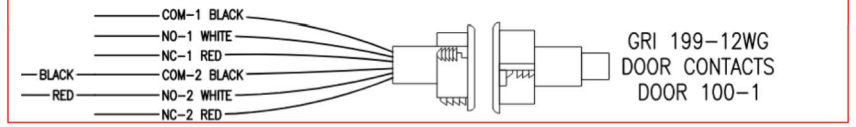
· FIRST FLOOR

NOTES:

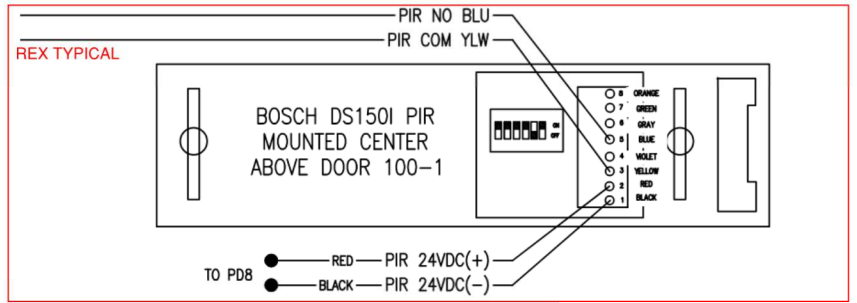
1. ATS to provide:
- Items in the Legend
- (1)-Day trip prior to electrical rough-in to work with the Owner to identify final device mounting locations.
- Configuration, Testing, and Training
- All cabling shown is illustrative. Cable/cabling to be provided by Owner's Electrical.

2. Owner to Provide:
- GC Door Hardware, Electrified Door Hardware, Electrical, Low Voltage, Device installation and termination, Cable Labeling
- CAD
- IP Addresses, Networking, Switch
- Wall Space for ACHE
- Scheduling
- User Group Access Levels

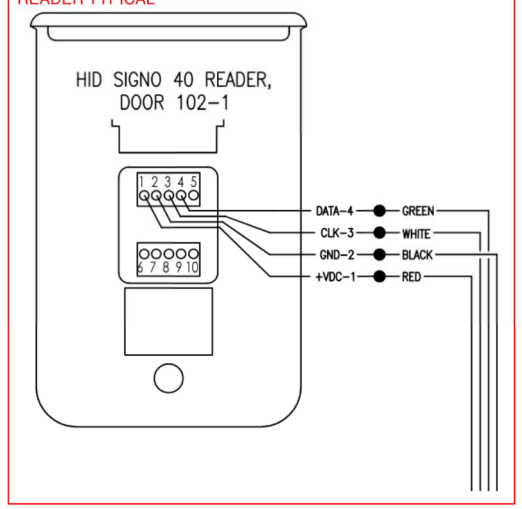
DOOR CONTACT TYPICAL



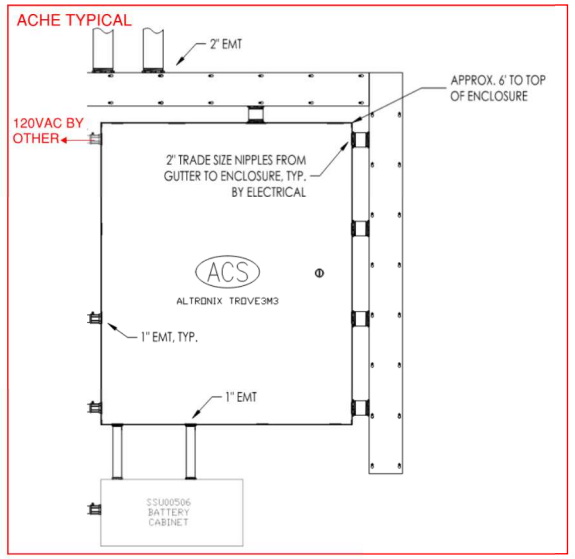
REX TYPICAL



READER TYPICAL



ACHE TYPICAL



ACHE WILL BE LOCATED IN THE BASEMENT

1-8

PS

NOTES TYPICAL

WIRE TABLE

TYPE	MANU.	PART NUMBER	DESCRIPTION
A	BELDEN	6584FS	COMPOSITE CABLE
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KENAITZE INDIAN TRIBE
TRIBAL COURTHOUSE

Special Systems - Appendix C

280000

Plot Date T

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers the furnishing of materials, labor, equipment and supervision required to complete the site earthwork construction including roads, walks, parking areas and building pad; excavation, fill and backfill and site grading and drainage as shown on the contract drawings.

1.02 TESTING

A. Where compaction requirements are specified, the maximum soil density shall be determined in accordance with the current requirements of AASHTO Standard Method T-180-D.

The Diameter of the test mold in AASHTO T-180 Method D limits the size of particles which may be included in the test to that passing the three-quarter inch (3/4") sieve. In those instances where the particles are retained on the three-quarter inch (3/4") sieve, a correction must be applied to the standard laboratory density prior to calculating the percent compaction. To expedite field result the plus three-quarter inch (3/4") material may be sieved wet and the weight computed as a percent of the total weight of the material from the hole. The corrected laboratory density shall be computed in each instance by the formula:

$$\text{Corrected Lab Density} = \frac{62.4}{\frac{A}{C} + \frac{62.4(B)}{rD}}$$

A = Percent by weight of original material retained on the 3/4-inch sieve, expressed as a decimal.

B = Percent by weight of original material passing the 3/4-inch sieve, expressed as a decimal.

C = Specific gravity of +3/4-inch material (apparent specific gravity) as determined by AASHTO T-85.

D = Uncorrected laboratory density (minimum 3/4-inch material).

R = Coefficient with value depending A, as follows:

For A = 0.18 or less, r = 1.00

A = 0.19 or more, r = 1.036 – 0.2A

B. The in-place soil density shall be determined in accordance with:

ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.

ASTM D2167 – Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; and/or

ASTM D6983 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Method (Shallow Depth)

C. In-place density tests shall be taken on each lift of fill or backfill placed during site grading at the rate of one test per 5,000 square feet of area. In-place density tests on each lift of trench backfill shall be taken at the rate of one test per 100 lineal feet, or one test per lift if the trench is less than 100 feet long. Failing test areas shall be re-compacted and retested until the

compaction requirements are met. Contractor shall coordinate and pay for compaction testing services provided by an independent third party. Testing results shall be provided to owner within 5 days of testing occurring.

D. Backfill under traffic and building structures and trench backfill from six inches (6”) over the top of the pipe to the surface shall be compacted to ninety-five percent (95%) of maximum density, unless otherwise noted and approved by the Owner’s Representative. The Owner’s Representative may permit lifts in excess of twelve inch (12") thickness when classified fill or backfill is placed over swampy or saturated ground, or where he is satisfied that the Contractor's method and equipment will consistently produce the specified density.

E. The backfill material shall be placed in horizontal loose lifts not exceeding twelve inches (12”) in thickness and compacted. Any excavations improperly filled shall be reopened to the depth required for proper compaction, then refilled and compacted at the Contractor's expense. The use of water in excess of the quantity required to obtain specified density (optimum moisture content) to settle or compact the backfill will not be permitted.

1.03 SUBMITTALS

A. Contractor shall submit a gradation test, in accordance with ASTM D-422, on each type and source of material used in fills and backfills. If material is to be non-frost susceptible, hydrometer tests shall be performed in accordance with ASTM D-7928 unless the material has less than 4% passing the 200 sieve. The results of a new gradation and hydrometer test shall be submitted by the Contractor for each furnished material and each time the furnished material changes from that which was previously approved.

B. Contractor shall submit a processing and blending plan to the Owner’s Representative for review and approval prior to utilization of classified fill or backfill from more than one source. The plan must be accompanied by materials analysis reports for each material source and fully describe how the material will be placed and blended to ensure that timely and accurate in-place density testing can be achieved.

1.04 DEFINITIONS

A. Classified Material

1. Classified fill and backfill shall contain no lumps, frozen material, organic matter, or other deleterious material, and shall be durable and sound. It shall have a plasticity index not greater than six (6) as determined by ASTM D-4318 and shall conform to one of the following types as required by the Drawings and Specifications. The coarse aggregate material conforming to the requirements specified below shall have a percentage of wear not to exceed thirty (30) after five hundred (500) revolutions, as determined by the current requirements of ASTM C-131. The portion of the material retained on a #4 sieve shall be known as coarse aggregate. Both coarse and fine aggregates shall conform to the quality requirements of AASHTO M-147.

2. Materials furnished by the Contractor for use as Type II Classified Fill and/or Backfill shall be graded within the limitations delineated below:

Type II

U. S. Std. Sieve Size	Cumulative % Passing By Weight

8"	100
3”	70-100
1 ½”	55-100
3/4”	45-85
#4	20-60
#10	12-50
#40	4-30
#200	2-6

In addition to the grading limits listed above, the fraction of material passing the #200 sieve shall not be greater than twenty percent (15%) of that fraction passing the #4 sieve.

3. Materials furnished by the Contractor for use as Type IIA Classified Fill and/or Backfill shall be graded within the limitations delineated below:

Type IIA Classified Fill

U. S. Std. Sieve Size	Cumulative % Passing By Weight
2"	100
3/4”	50-100
#4	25-60
#10	15-50
#40	4-30
#200	2-6

In addition to the grading limits listed above, the fraction of material passing the #200 sieve shall not be greater than twenty percent (20%) of that fraction passing the #4 sieve.

4. Materials furnished by the Contractor for use as Type III Classified Fill and/or Backfill shall be approved sand or gravel with a maximum of ten percent (6%) passing the #200 sieve.

5. Materials furnished by the Contractor for use as Leveling Course shall be graded within the limitations delineated below:

Leveling Course

U. S. Std. Sieve Size	Cumulative % Passing By Weight
1"	100
3/4”	70-100

3/8”	50-80
#4	35-65
#8	20-50
#50	8-28
#200	*2-6

*In addition to the grading limits stipulated above, fractions passing the #200 sieve shall not be greater than seventy-five percent (75%) of the fractions passing the #50 sieve.

Course Aggregate: The coarse aggregate material conforming to the requirements specified above shall have a percentage of wear not to exceed thirty-five (35) after five hundred (500) revolutions, as determined by the current requirements of ASTM C-131. It shall consist of angular fragments reasonably uniform in density and quality, and reasonably free from thin and elongated pieces, dirt, and other objectionable material. At least fifty percent (50%) of the coarse aggregate particles shall have two or more mechanically fractured faces.

Fine Aggregate: The fine aggregate shall consist of material free of organic or other objectionable matter. The fine aggregate, either naturally combined with the coarse aggregate or separately obtained and mixed therewith, shall be of such character that the composite material will conform to the gradation and other requirements specified.

B. Additional Excavation: Excavation beyond the limits necessary to place classified or unclassified material, where authorized in writing in advance by the Owners Representative.

C. Area Grading: Area grading consists of the excavation and fill work, along the perimeter of the site, necessary for a smooth transition from the design site grades to the grade(s) of the adjacent properties. This work is also commonly called "site grading" or "overlot grading".

D. Backfill: Material placed in an excavated area.

E. Bedding: Ground or support in which pipe is laid. Type III Classified Fill, with the additional requirement that no particles may be greater than 3” size that is used for backfill in a utility trench at the direction of the Owner’s Representative.

F. Borrow: Material used as fill and/or backfill which is obtained from a source other than required excavation.

G. Disposal Site: Any area where waste, unsuitable, unusable or surplus material from construction is placed. Contractor must provide offsite disposal site throughout duration of project.

H. Excavation: Area or material removed to provide a suitable base for improvement.

I. Fill: the material placed above the original or natural ground line.

J. Leveling Course: compacted material placed above the subbase and below the finishing surface of the improvement.

K. Non-Frost-Susceptible (NFS) Material: Non-organic soil containing less than three percent (3%) by weight of grains smaller than .02 mm obtained from minus three inches (-3") material.

L. Over-Excavation: Any excavation beyond limits of the contract that has been done without the written authorization of the Owner's representative.

M. Service Connection: Any connection from a main line utility or storm drain to a property line for the purpose of providing service to an individual property.

N. Subbase: The subbase is compacted material placed above the subgrade and below the leveling course.

O. Subgrade or Bottom of Excavation: The subgrade is material below the bottom of excavation and upon which the subbase material is placed.

P. Suitable Soils: Excavated soils that conform to the requirements for the intended use as determined by the Owner's Representative.

Q. Trench: Any Excavation for a utility or drainage system.

R. Unclassified Material: Inorganic soils, free of trash, peat, volcanic ash, debris, or frozen clods.

S. Unsuitable soils: All soils and debris that do not conform to the requirements for Type III classified fill, or which do not meet the requirements for the intended use, as determined by the Owner's Representative.

T. Usable excavation: Inorganic non-frost susceptible sand or gravel soils, free of trash, peat, volcanic ash, debris, or frozen clods, that are excavated from the project site and are approved by the Owner's Representative for incorporation into the backfill.

U. Unusable Excavation: All suitable excavated soils that are surplus to the needs of the project and all unsuitable soils as designated by the Owner's Representative.

1.05 WEATHER LIMITATIONS

A. Unless otherwise authorized by the Owner's Representative, fill, backfill, and leveling course shall not be placed when the atmospheric temperature is below 35 degrees Fahrenheit. When the temperature falls below 35 degrees Fahrenheit, it shall be the responsibility of the Contractor to protect all areas of completed work against any detrimental effects. Any areas of work not completed in accordance to the plans and specifications that are damaged by weather shall be reconditioned, reshaped, and recompacted by the Contractor in conformance with the requirements of these specifications without additional cost to the owner.

1.06 EXISTING UTILITIES

A. At various stages of the project the Contractor will be required to work in close proximity to existing utilities, including possible removal of material over, under, and adjacent to the lines. It is the Contractor's responsibility to contact the utility owners for locations, scheduling, and additional information.

B. The Contractor shall protect these lines in a manner approved by both the Owner's Representative and the Utility Owner in writing.

C. Compaction density and techniques in the vicinity of existing utilities shall conform to requirements for classified fill.

D. The Contractor is directed to contact the utility companies both prior to bidding and during construction, for information about existing utilities, scheduling, location and other pertinent information.

E. Utilities are required to be relocated during construction. The Contractor is directed to contact the utility companies both prior to bidding and during construction and include any additional costs in relocating utilities in bid amount.

1.07 CONTAMINATED MATERIAL

A. Unless otherwise noted in the Contract Documents, the Owner is not aware of any contaminated material within the project limits. If such material is encountered, Contractor shall notify the Owner's Representative immediately for direction. Unless the contamination was caused by Contractor's operation, discovery of contaminated material will be treated as a changed condition.

1.08 EQUIPMENT

All equipment, tools, and machines used in the performance of the Work covered by these Specifications shall be subject to the approval of the Owner's Representative and shall comply with all applicable safety requirements. All equipment used on the project shall be adequately maintained and shall be the proper equipment for the Work being accomplished so as to produce the result required by the Contract Documents.

1.09 RELATED WORK

A.	Construction Survey	Section 310100
B.	Geotextiles	Section 312010
C.	Asphalt Paving	Section 321216

PART 2-PRODUCTS

2.01 MATERIAL SOURCE

A. When the quantity of classified, unclassified, and screened soils required for the work exceeds that available from excavated materials, the additional material shall be from Contractor-furnished borrow areas. The Contractor shall locate, obtain, develop and process classified and unclassified materials to complete the requirements of work.

B. The source of materials shall be approved by the Owner's Representative. Any change in the source of materials during the construction shall be approved by the Owner's Representative.

2.02 MATERIAL HANDLING

A. When the soils into which the excavation will penetrate and/or when the backfill soils are sensitive to erosion, sloughing under seepage forces, softening during soaking, and/or repeated loading of heavy equipment, the Contractor shall take all necessary steps to protect the work. These may include, but are not limited to:

1. Sloping the excavation to drain and/or dewatering from inside the excavation with sumps and/or pumps or from outside the excavation with well-points or other means;

2. Limiting construction traffic to designated and maintained construction roads and placing additional temporary fill as necessary to support the traffic loads.

3. Developing alternate access routes.

4. Excavating with a smooth bladed backhoe from outside the excavation.

5. Covering of temporarily stockpiled unclassified fill to protect it from precipitation as directed.

6. Using only dryer unclassified fills for compaction and reuse.

7. The costs to protect the work shall be included in the bid price for earthwork.

B. If the subgrade or backfill soils are disturbed by surface runoff, ponding, seepage, and/or construction traffic, the disturbed soils shall be regraded and densified to the density requirements specified herein or completely removed and replaced with classified materials compacted to the density requirements specified herein. The corrective work shall be performed by the Contractor at no additional expense to the owner.

PART 3 – EXECUTION

3.01 CONSTRUCTION STAKING

A. General

The Contractor shall furnish all vertical and horizontal controls and staking sufficient for Contractor's needs to accurately complete the requirements of this project.

B. Contractor shall furnish Professional Land Surveyor for Measurement of excavation and fill quantities as specified in Section 310100.

3.02 SITE EXCAVATION

A. General

1. Excavation consists of the removal and reuse or disposal of all materials encountered to obtain the required subgrade elevations in accordance with the typical sections shown on the Drawings, and as directed by the Owner’s Representative.

2. Excavated material conforming to the specifications for classified fill and backfill shall be used where practical for fill and backfill as directed by the Owner’s Representative. When this material is used, it shall be considered usable excavation. When not used on the Project site, the material shall be hauled away and treated as unusable excavation. Unusable excavation shall be hauled to a Contractor-furnished disposal site. Unless otherwise specified in the Special Provisions, the Contractor will not be required to transport usable excavation from one schedule of a Contract for use in another schedule of the same Contract unless they are continuous or adjacent. Suitable excavated materials shall not be removed from the site unless they are surplus to the requirements of the work and then only with the written approval of the Owner's Representative. Excess suitable material not incorporated in the work and unsuitable material shall be transported to a contractor furnished disposal site.

3. The excavation shall conform to the limits shown on the drawings and as directed by the owner’s representative, within a tolerance of 0.10 feet. Excavation beyond the limits indicated on the drawings is not permitted without written approval. The Owner's Representative is to be notified 24 hours in advance of Contractors need for after

excavation surveys. Payment for excavation will be based on typical sections shown on the drawings, and as directed by the Owner's Representative.

4. Excavation shall be performed in a manner that will not endanger adjacent structures or improvements. Contractor shall shore excavations and trenches as required to avoid damaging existing roadways or structures.

5. Where unusable soils are encountered in the subgrade within the specified depth below finish grade as indicated on the Drawings, the Contractor shall excavate to a depth such that usable soils are uncovered or the depth below finished grade as directed by the Owner's Representative. The excavations shall be uniformly shaped so that classified backfill material can be properly placed and compacted. The area shall be feathered to adjoining areas where usable material is found. Excavated area shall not be backfilled until cross sectional elevations and measurements of the area excavated have been taken.

B. Dewatering

1. The Contractor shall plan his operation in a sequence that will provide drainage at all times. The excavation shall be shaped to drain and shall be maintained in a dry condition, free of puddles or holes where water may accumulate. Any areas that cannot be so drained shall be kept free of standing water by pumping, if necessary. Unless otherwise provided in the Specifications, all Work associated with pumping or dewatering shall be considered incidental to the Contract and no separate payment shall be made.

C. Roadways, Parking Areas, Building Pad and Paved Parking Areas

1. Excavation shall be carried to the subgrade elevations required for the placement of classified material and to such additional depths as required to remove unsuitable material as directed by the Owner's Representative.

2. Classified fill shall only be placed on a dewatered, non saturated subgrade and shall not be placed until the subgrade has been approved in writing by the Owner's Representative.

D. Additional Excavation

1. The Owner's Representative will inspect and approve the various subgrade areas as they are excavated. He may direct that soils found to be excessively soft, wet, or otherwise unsuitable below the subgrade elevations shall be removed.

2. The Contractor shall promptly perform all such additional excavation that is authorized in writing.

3. The resulting additional excavation will be measured for unit price payment.

4. Backfill shall match sections shown on the Drawings.

G. Over Excavation

1. Over excavation shall be restored by the Contractor by backfilling with Type IIA classified material and compacting to 95% of the maximum density at no cost to the Owner.

H. Stability of Excavations

1. The Contractor shall slope the sides of excavations to the angle required for safety, or shore and brace where sloping is not possible either because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in a safe condition until completion of backfilling, by scaling, benching, shelving or bracing. Take precautions to prevent slides or cave-ins when excavations are made in locations adjacent to backfilled excavations, and when sides of excavations are subjected to vibrations from vehicular traffic or the operation of machinery, or any other source. In all cases the sides of all excavations shall be constructed to satisfy the requirements set forth in the local, state, and federal safety regulations regarding shoring and slope angle.

I. Cold Weather Protection

1. The subgrade must be kept from freezing from the time earthwork begins until final grades have been achieved or backfill is done, unless specified otherwise, in writing, by the Owner's Representative.

2. All subgrade which is allowed to freeze shall be thawed and compacted to 95% of the maximum density by the Contractor at no expense to the Owner, unless specified otherwise, in writing, by the Owner's Representative.

3.03 FILL AND BACKFILL

A. General

1. Fill and backfill consists of the placement of classified and/or unclassified material in layers to the required elevations.

2. The subgrade shall be cleared of all debris and organic material. All depressions or holes below the general area surface level, whether caused by removal of debris or unacceptable material, or otherwise, shall be backfilled with approved material and compacted to specified density and to a level, uniform surface before the placement of other layers. Embankment shall not be placed on frozen ground, nor on ground having a slope greater than one vertical to four horizontal (slope 1:4).

3. The specified material shall be constructed at the locations and to the lines and grades indicated on the Drawings. The material shall be placed and spread uniformly in successive layers not exceeding twelve inches (12”) in loose thickness. The Owner’s Representative may approve lifts of greater thickness provided the equipment and method used will consistently achieve the specified density. The layers shall be carried up full width from the bottom of the fill to avoid the necessity of widening the edges after the center has been brought to grade. Each layer shall be compacted to not less than ninety-five percent (95%) of the maximum density at optimum moisture as determined by the method of testing noted in Testing section. Reasonable time shall be provided to the Owner’s Representative to make field density determinations prior to placement of successive layers of material.

4. Blading, rolling, and tamping shall continue until the surface is smooth, free from waves and irregularities, and conforms to elevations shown on the Drawings. If at any time the material is excessively wet, it shall be aerated by means of blade graders, harrows, or other suitable equipment until the moisture content is satisfactory. The surface shall then be compacted and finished as specified above.

2. All excavated materials meeting the requirements for classified and unclassified materials shall be incorporated into the work unless they are surplus to the requirements of the work and the Owner's representative has given written approval not to use the material.

4. Fills and backfills shall be constructed in lifts of twelve (12) inches maximum thickness, (six inches maximum thickness if hand operated compactors are used) and compacted to not less than 98% of maximum density. The finished surface of fills and backfills shall be smooth with no soft or yielding areas and shall be graded to not more than 0.05 feet above or below the design grade.

5. The Contractor shall backfill excavations as promptly as the work permits, but not until completion of the following:

   a. Owner's acceptance of construction below finish grade such as culverts, subdrains, and other utilities.

   b. Inspection, testing, approval, and recording locations of underground utilities.

   c. Removal of shoring and bracing, and backfilling of any resulting voids with satisfactory materials. Cut off temporary sheet piling driven below the bottom of structures and remove in a manner to prevent settlement of the structure or utilities; or leave in place if required.

   d. Removal of trash and debris.

   e. Placement of permanent or temporary horizontal bracing on earth retaining wall.

C. Trench Bedding

1. Trench Bedding shall only be used where directed by the Owner’s Representative, when required due to wet trench conditions.

D. Cold Weather Protection

1. The fill and backfill must be kept from freezing from the time earthwork begins until final surfacing is complete, unless work is discontinued due to a seasonal shutdown. In the event work is suspended due to a seasonal shutdown, such as winter, the ground shall be completely thawed to all depths prior to resuming work.

2. All fill and backfills which is allowed to freeze shall be thawed and compacted to 95% of the maximum density by the Contractor at no expense to the Owner, unless specified otherwise, in writing, by the Owner's Representative.

3.04 GEOTEXTILES

A. Geotextile Fabric

1. The subgrade shall be shaped according to the typical section shown on the drawings and as directed. The subgrade shall be free of large rocks, sticks, and deleterious material. Fabric shall be installed in full roll widths. All end and side joints shall be overlapped 2 feet minimum.

2. Where manholes, valve boxes, or other items will penetrate the fabric, the fabric shall be neatly cut in the shape of the penetration. A second piece of fabric shall then be placed on top of the main fabric. The second piece shall extend at least four feet in all directions from the penetration.

3. Fill and backfill shall be dumped and spilled over the fabric. No equipment shall operate directly on the filter fabric. Filter fabric must be covered with at least one foot of classified material backfill before equipment is allowed to operate over it.

3.05 TOPSOIL

A. General

The Work under this Section consists of providing all operations pertaining to furnishing, transporting, and spreading of topsoil.

B. Materials

Topsoil furnished by the Contractor shall consist of a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials. It shall be shredded and free from roots, hard clay, rocks larger than one inch (1") in any dimension, noxious weeds, seeds or plant propagules, tall grass, brush, sticks, stubble, or other litter, and shall have indicated by a healthy growth of crops, grasses, trees, or other vegetation that it is free-draining and non-toxic. Topsoil shall contain not more than ten percent (10%) gravel by dry weight of total sample. For the purposes of this specification gravel is defined per ASTM D422 modified to include only material passing one inch (1”) and retained on the No. 4 sieve.

Topsoil shall conform to the following requirements, as tested using the procedures included in ASTM D422, ASTM D2974 and AASHTO T267. The topsoil shall be inspected and tested by the Engineer before approval will be granted for its use.

	Topsoil Mix
Organic Material*	15 to 25% by total sample dry weight
Silt	25 to 45% by dry weight
Sand	35 to 55% by dry weight

*Organic matter is to be determined by loss-on-ignition of oven-dried material in accordance with ASTM D2974.

Organic material for incorporation into topsoil, shall be partially decomposed peat moss. Organic material shall be from a source above the water table. Peat moss may require chopping or shredding to insure thorough mixing with the topsoil.

C. Placing

Placement of Topsoil shall not occur until the project area has been inspected and approved by the Engineer.

The topsoil shall be evenly spread on the designated areas to a depth of four inches (4”) after settlement unless otherwise specified on the Drawings. Contractor shall not place or spread topsoil when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the Work.

Settlement for seeded areas shall be achieved by rolling the topsoil with a water-filled drum approved by the Engineer. The Engineer may direct that topsoil placed on slopes be track-walked perpendicular to the slope with a small track dozer. Track walking shall be incidental to this bid item and no separate payment shall be made.

Topsoil in planting beds shall be at the depth shown on the Drawings, but no less than twelve inches (12”).

Contractor shall keep roadway surfaces within the project and on haul routes clean during hauling and spreading operations.

3.06 SEEDING

A. General

The Work under this Section shall consist of providing all labor, equipment, and materials for the preparation of ground surfaces for the application and maintenance of seeded areas, fertilization, lime application (if necessary), watering, and mulching at locations shown on the Drawings or established by the Engineer.

All seeding shall be performed between May 1 and September 1. Seeding any other time will only be allowed upon written approval from the Engineer. Seeding shall not be done during windy conditions or when climatic or ground conditions would hinder placement or proper germination of seed mixes.

B. Materials

1. Seed

Seed shall be certified and shall be furnished in standard containers with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the Engineer duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within a 9 month period prior of application. This statement shall include name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished and, in case of a mixture, the proportions of each kind of seed. Seed that has become wet, moldy, or otherwise damaged in transit or storage will not be acceptable.

The Contractor shall submit to the Engineer a certification tag for the seed mixes provided listing species, proportion by weight, percent purity, and percent germination. The certification tag shall come from the specified seed mixes and be removed from the unopened bags in the presence of the Engineer. Contractor shall deliver seed to the site in its original unopened container, which shall bear the vendor’s guarantee of analysis.

Seed shall conform to one of the following seed mix:

Mowable Seed Mix – Application Rate: 5 lbs. / 1,000 s.f.

NAME	PROPORTION BY WEIGHT	PURITY	GERMINATION
Annual Ryegrass (Lolium multiflorum)	5%	90%	85%
Kentucky Bluegrass – Kenai (Poa pratensis “Kenai”)	30%	90%	85%
Kentucky Bluegrass – Alene (Poa pratensis)	25%	90%	85%
Boreal Fescue (Festuca rubra ‘Boreal’)	40%	90%	85%

2. Fertilizer

Fertilizer shall be a standard inorganic or organic commercial grade supplied separately or in mixtures and furnished in moisture-proof containers. Each container shall be marked with the weight and the manufacturer's guaranteed analysis of the contents showing the percentage for each ingredient contained therein. The proportion of chemical ingredients furnished shall be a mixture such as to provide the total available nitrogen, phosphoric, and potassium as required by the soil analysis or as specified in the Special Provisions. At least five (5) days prior to placement, the Contractor shall submit to the Engineer for approval an analysis of the proposed fertilizer and Manufacturer’s Certificate of Compliance indicating Specifications are met.

Tolerances of the chemical ingredients shall be plus or minus two percent (+/- 2%).

No cyanamid compounds or hydrated lime will be permitted in mixed fertilizers.

3. Fertilizer

Limestone shall contain not less that eighty-five percent (85%) of calcium and magnesium carbonates. Agricultural ground limestone suitable for application by a fertilizer spreader shall conform to the following gradation:

Sieve Designation	Minimum Percent Passing, by Weight
# 10	100
# 20	90
# 100	50

Fertilizer and limestone for use in a hydraulic sprayer shall be soluble or ground to a fineness that will permit complete suspension of insoluble particles in water.

4. Mulch

Shall be dried shredded peat moss or cellulose wood or paper fiber such as “Astromulch,” Eco Fiber,” “Conwed,” or approved equal.

5. Water

Water used in all operations shall be of potable quality.

C. Application

1. Soil Preparation

After grading of areas has been completed in conformity with the lines and grades shown on the Drawings, and before beginning seeding operations, the areas to be seeded shall be cultivated to provide a reasonably firm but friable seedbed. Cultivation shall be carried to a depth of two inches (2"). On slopes steeper than 3:1, depth of cultivation may be reduced as directed by the Engineer. All cultivated areas shall be raked or cleared of stones (one inch [1"] in diameter and larger), weeds, plant growth, sticks, stumps, and other debris or irregularities which might interfere with the seeding operation, germination of seed, or subsequent maintenance of the seed-covered areas. Contractor may be required to track-walk slopes 2:1 or over as directed in the Drawings or by the Engineer.

2. Fertilizer

Fertilizer used with topsoil shall be applied at a rate to provide two (2) pounds actual Nitrogen per thousand (1,000) square feet of area. In the absence of soil tests and direction from the Engineer, the Contractor shall apply 16-16-16 at the rate of twelve and one-half (12.5) pounds per thousand (1,000) square feet.

When applying a fertilizer used with the soil amendment, the Contractor shall apply a natural /organic based fertilizer with 25% slow release materials such as Arctic Gro Biotic Fertilizer. The organic based fertilizer shall have a minimum guaranteed analysis of 10-10-10-8.5S. It should provide a minimum of 10% (N) nitrogen, 10% (P) phosphate, 10% (K) potash, and 8.5% (S) sulfur. The fertilizer shall contain Humic DG (Dispersing Granule) to promote microbial growth and soil fertility and Sustane Organic for greater root development. It should be in a granular form that is easily spread. Apply at five hundred pounds per acre (500 lbs/acre).

3. Limestone

Limestone, whether in liquid or dry form, shall be applied at a sufficient rate to attain a soil pH between 6.0 and 7.0.

4. Application Methods

All machinery shall be free of invasive weeds, seeds, or plant propagules. Apply seed mixtures at rates as specified and/or as directed by the Engineer. Seed, fertilizer, limestone, mulch, and water may be applied by the following methods:

a. Hydraulic Method

Seeding by hydraulic methods shall consist of furnishing and placing a slurry made of seed, fertilizer, dried peat moss or cellulose wood fiber and water.

The dried peat moss or cellulose wood fiber shall be added to the water slurry in the hydraulic seeder after the proportionate amounts of seed and fertilizer have been added. The slurry mixture shall then be combined and applied in

such a manner that the rate of application will result in an even distribution of all materials.

Hydraulic seeding equipment shall be capable of maintaining a continuous agitation so that a homogeneous mixture can be applied through a spray nozzle. The pump shall be capable of producing sufficient pressure to maintain a continuous, non-fluctuating spray capable of reaching the extremities of the seeding area with the pump unit located on the roadbed. Sufficient hose shall be provided to reach areas not practical to seed from the nozzle unit situated on the roadbed.

b. Dry Method

Mechanical spreader, seed drills, landscape seeder, cultipacker seeder, fertilizer spreader, or other approved mechanical spreading equipment may be used when seed and fertilizer are to be applied in dry form. Fertilizer shall be spread separately at the specified rates, and then incorporated in one operation to a minimum depth of two inches (2"). Seeded areas shall be compacted within twenty-four (24) hours from the time the seeding is completed, weather and soil conditions permitting, by cultipacker, roller or other equipment satisfactory to the Engineer. Compacting equipment shall be operated at right angles to the slope. Compaction shall not be performed when the soil is in such condition that it will be picked up by the equipment, nor shall heavy soils be compacted unless directed by the Engineer.

c. Hand Method

Hand broadcasting by means of portable, hand operated mechanical spreaders or "by hand" may be substituted for the preceding two (2) methods provided that the application rate is twice that of the dry method, and that the application is applied in a minimum of two (2) passes over the areas to be seeded (at ninety degrees [90°] to one another in order to assure uniform and even coverage to all seeded surfaces).

D. Maintenance

1. General

The Contractor shall furnish all labor, materials, supplies and equipment required to establish, maintain, and protect the planted and seeded areas, for a one year Plant Establishment Period from date of acceptance of the initial planting operations. However, maintenance activities shall commence immediately after each item is planted or when areas have been seeded.

The Contractor shall supply a maintenance schedule to the Engineer, thirty (30) days prior to the landscape inspection. The Contractor shall also be responsible for protection of his work during the maintenance period, and shall repair and replace all materials and seeded areas damaged or destroyed within the scope of the Work, regardless of cause.

The Contractor's staff shall include supervisory personnel experienced in landscape maintenance. The Work Force is to be experienced and familiar with maintaining plant material in subarctic conditions.

Contractor shall replace any tree or shrub damaged by vandalism, a lawnmower, weed whip or other equipment at no additional cost to the Owner.

2. Watering

A proposed watering schedule shall be submitted to the Engineer thirty (30) days prior to installation of plant materials. The Contractor shall notify the Engineer of watering activities. The Contractor shall keep a log of date, time of day, and amount of water used for every watering activity.

The Contractor shall deep water all trees and shrubs, providing water penetration throughout the root zone to the full depth of the planting pits. Deep water application shall be applied at a low pressure application rate using hand watering with a hose with a minimum of water run-off.

Watering shall cease at first hard frost in the fall and shall resume upon ground thaw in the spring.

If at any time during the maintenance period weather conditions (such as extended period with no rain or continuous drying winds) cause the plant root zone to dry out, the Engineer may direct the Contractor to deep water all trees and shrubs. Contractor shall provide supplemental watering immediately and at no additional cost to the Owner.

Should soil conditions be encountered that are not conducive to water absorption, the Contractor shall take whatever corrective actions that may be required to correct this condition, without additional cost to the Owner.

Turf, seeded, bulb areas, and annual flower beds shall be watered at such frequency as weather conditions require to maintain soil moisture within the root zone. When establishing turf and seeded areas, the soil shall be watered often enough to maintain a moist seedbed to promote healthy seed germination resulting in an even and uniform coverage. If the Contractor does not provide adequate watering as required by the Engineer, the Engineer will hire others to perform this task and deduct costs from final payment to the Contractor.

The Contractor shall protect seeded areas from damage from all traffic, whether people, animals, on or off road vehicles, or any other causes which may damage newly seeded and maintained surfaces. Contractor shall maintain a minimum coverage of 90%. Surfaces damaged shall be repaired by regrading, reseeding (including all specified amendments), as directed by the Engineer, at no additional cost to the Owner. The Contractor shall otherwise maintain seeded areas, including regular mowing, in a satisfactory condition until Seeding Acceptance.

On the fortieth (40th) day of the maintenance period, the Contractor shall apply one application of fertilizer (16-16-16) at the rate of seven (7) pounds per thousand (1,000) square feet.

E. Seeding Acceptance

1. Acceptance

A Landscaping Acceptance Inspection of the project will occur after completion of the Plant Establishment Period. Engineer shall verify that Contractor performed maintenance functions as identified above. If the Engineer does not accept the improvements, the Contractor shall correct all deficiencies. All costs associated with correcting the deficiencies and extending the Plant Establishment Period shall be paid by the Contractor without additional cost to the Owner, until all Work is complete and accepted by the Engineer.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work covered by these Specifications consists of providing all plant, labor, equipment supplies, material, transportation, handling, and storage, and performing all operations necessary to complete the construction of hot mix asphalt concrete pavement consisting of one or more courses on a previously prepared base, seal coat of asphalt cement and cover aggregate, and bituminous surface treatment in single or multiple courses.

1.02 REFERENCE SPECIFICATIONS

All work in this section shall be in conformance to the "Standard Specifications for Highway Construction, 2015 Edition" of the Alaska Department of Transportation and Public Facilities (ADOT&PF), Section 401- Asphalt Concrete Pavement, and Section 703 – Aggregates, and as described in this Section.

1.03 REFERENCE STANDARDS

A. Testing Standards for Asphalt Concrete Pavement

1. Cores: ASTM D979-15. "Sampling Bituminous Paving Mixtures".

2. Core Density: ASTM D2726-17. "Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures".

3. Thickness: ASTM D3549-11. "Thickness and Height of Compacted Bituminous Paving Mixture Specimens".

4. Density: Alaska Test Method (ATM) 409. “Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)”.

4. Nuke Density: ASTM D2950-14. "Density of Bituminous Concrete in Place by Nuclear Methods".

5. Asphalt Content: ASTM D4125-10. "Asphalt Content of Bituminous Mixtures by the Nuclear Method".

6. Gradation: ASTM C136-14. "Sieve Analysis of Fine and Coarse Aggregates".

7. Marshall Analysis (Stability): ASTM D2726-17. "Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures”.

8. Extraction: ASTM D2172-17. "Quantitative Extraction of Asphalt Binder from Asphalt Mixtures".

1.04 SUBMITTALS

A. Asphalt Concrete: The Contractor, at his expense, shall submit for approval, a Job Mix formula (with accompanying curves) within the limits established by the reference specifications, for the mix designated by this Contract. The Contractor shall also submit a certification that all

materials provided under this project comply with the Job Mix formula and the project specifications.

PART 2 – PRODUCTS

2.02 ASPHALT CONCRETE PAVEMENT

A. Asphalt Concrete shall meet the requirements of ADOT&PF Class 'A' with Type II Aggregate.

PART 3 - EXECUTION

3.01 TESTING

A. Compaction tests shall be taken on at the average rate of one test per 5,000 square feet of area for both the Base Course and the Asphalt Pavement. Failing tests shall be retested at no additional cost to the Owner.

B. Asphalt content and gradation tests shall be taken for the Asphalt Pavement at the average rate of one test per 5,000 square feet of area.

3.02 CONSTRUCTION STAKING

A. The Contractor shall provide construction staking (blue tops) for establishing proper grades on the leveling course on a nominal 50 ft grid plus all breaks in grade.

3.03 ASPHALT PAVEMENT

A. Weather Limitations

1. Asphalt concrete mixture shall not be placed when it is raining or when rain is imminent, on a saturated surface, on an unstable/yielding roadbed, when the base material is frozen, or when weather conditions prevent proper handling or finishing of the mixture.

2. No mix shall be placed when water is puddled or standing on the surface of base course.

3. Asphalt concrete mixture shall not be placed unless the surface temperature is forty-five degrees (45°) Fahrenheit or warmer and the ambient air is at least thirty-two degrees (32°) Fahrenheit and not descending. Air temperature shall be measured in the shade away from heat sources at the paving site. provided hot-mix asphalt shall be delivered continuously to the paver at temperatures between 250 and 325 degrees Fahrenheit.

B. Preparation of Area to be Paved

1. The area to be paved shall be true to line and grade, having a smooth dry, compacted surface prior to the start of paving operations. The area to be paved shall be free from all loose asphalt and foreign material.

2. Contractor shall notify the Owner's Representative, a minimum of twenty-four (24) hours prior to paving, that the newly constructed, rotomill planed, or existing surface, has been prepared in conformance with the Drawings and Specifications and are ready to be paved. The Owner's Representative shall inspect the grade through the use of string line, straightedge, levels, or any other means necessary. Upon determining the grade that has been proposed for paving is in conformance with the Drawings and Specifications, Engineer will provide written authorization for the Contractor to proceed with the paving. The Contractor shall not initiate paving prior to receiving written authorization to proceed.

3. The surface of the Leveling Course, when finished, shall not demonstrate any deviation in excess of three-eighths inch in ten feet (3/8" in 10') parallel with, and at right angles to, the centerline, or more than five-eighths inch (5/8") total from centerline to face of curb of the area to be paved. Any deviation in excess of this amount shall be corrected by loosening, adding, or removing material and reshaping and compacting to satisfy the above requirement.

4. Existing paved surfaces shall be cleaned of loose material by sweeping with a power broom, supplemented by hand sweeping, if determined necessary by the Engineer.

5. Contact surfaces of curbing, gutters, manholes, and other structures shall be painted with a thin, uniform coating of asphaltic cement or approved equal material prior to the mixture being placed against them. Butt joints on previously placed cooled pavement shall be saw cut and tack coated prior to continuing the paving operation.

6. Contractor shall not pave against newly placed concrete curbing until said curbing has cured for a minimum seven (7) days. For the purpose of paving operations only, curb curing time may be reduced to seventy-two (72) hours only upon receipt of Contractor's written certification that Type III Portland High-Early-Strength cement concrete was used in, properly placed, and appropriate curing compounds were applied to the adjacent curb and gutter.

C. Preparation of Paving Asphalt

1. The asphalt shall be heated at the paving plant to a temperature at which it can be properly handled through the pumping system, but at no time shall the temperature of the asphalts exceed that recommended by the asphalt supplier or manufacturer, or be greater than three hundred twenty-five degrees (325º) Fahrenheit or less than two hundred fifty degrees (250º) Fahrenheit.

D. Hand Spreading

1. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the asphalt concrete mixture shall be spread, raked, and luted by hand tools. For such areas, the asphalt concrete mixture shall be placed to the required compacted thickness and density.

E. Compaction

1. Immediately after the asphalt mixture has been spread, struck off and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling.

2. The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving.

3. Initial rolling shall be done with a steel-drum roller with the drive roll operating toward the paver, and/or a suitable pneumatic tired roller. Initial rolling shall be completed while the bituminous mat temperature is above two hundred twenty-five degrees (225º) Fahrenheit.

4. Following the initial rolling at least three coverages of the pavement shall be completed with a pneumatic tired roller, while the mat temperature is above one hundred seventy-five degrees (175º) Fahrenheit.

5. Final rolling shall be completed with a steel–drum roller and shall continue until roller marks and further compression are not evident in the pavement and specified density has been achieved.

6. Unless otherwise directed, rolling shall begin at the sides and proceed longitudinally parallel to the road center line, each trip overlapping one-half the roller width, gradually progressing to the crown of the road. When paving in echelon or abutting a previously placed lane, the longitudinal joint should be rolled first followed by the regular rolling procedure. On superelevated curves the rolling shall begin at the low side and progress to the high side by overlapping of longitudinal trips parallel to the centerline.

7. Any displacement occurring as result of the reversing of the direction of a roller, or from other causes, shall be corrected at once by the use of rakes and addition of fresh mixture when required. Care shall be exercised in rolling not to displace the line and grade of the edges of the asphalt mixture.

8. To prevent adhesion of the mixture to the rollers, the wheels shall be kept properly moistened with water or water mixed with very small quantities of detergent or other approved material. Excess liquid will not be permitted.

9. Along forms, curbs, headers, walls, and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.

10. Rollers or other vehicles shall not be parked or left standing on pavement that has not cooled sufficiently to prevent indentation by wheels.

11. The Lower Specifications Limit for density is 92.0% of the Maximum Specific Gravity (MSG) as determined by ATM 409.

F. Joints

1. Joints shall be constructed to ensure a continuous bond between old and new sections of the course. All joints shall present the same texture and smoothness as other

sections of the course. The Contractor shall offset the longitudinal joints in the top layer from the joint in the layer immediately below by at least four inches (4”).

2. When joining existing pavement and new pavement, the old pavement shall be cut in a neat line with a power driven saw.

3. Improperly formed joints resulting in surface irregularities shall be removed full depth, replaced with fresh asphalt concrete mixture, and thoroughly compacted. Rolling of joints after the material has cooled below one hundred seventy degrees (170º) Fahrenheit shall not be allowed. All pavement removal shall be precut to a neat line with a power-driven saw.

4. A tack coat of asphalt cement or asphalt emulsion shall be applied on all cold joints and allowed to break prior to placing fresh asphalt concrete mixture against the joint. This Work shall be completed by Contractor just prior to paving.

5. Transverse joints shall be formed by saw cutting back on the previous run to expose the full depth of the course or by using a removable bulkhead. Transverse joints shall not be perpendicular to centerline, but shall be skewed between fifteen and twenty-five degrees (15º and 25º).

G. Repair and Replacement

1. Asphalt concrete mixture that becomes contaminated with foreign material or is in any way defective as determined by the Engineer shall be removed. Skin patching will not be permitted. Defective materials shall be removed for the full thickness of the course. The pavement shall be cut so that all edges are vertical, the sides are parallel to the direction of traffic, and the ends are skewed between fifteen and twenty-five degrees (15º and 25º). Edges shall be coated with a thin tack coat of material. Fresh asphalt concrete mixture shall be placed in sufficient quantity so that the finished surface will conform to grade and smoothness requirements. The asphalt concrete mixture shall be compacted to the density specified. Any area determined to have an excess or deficiency of asphalt concrete shall be corrected by full depth removal and replacement. No payment shall be made for material replacing defective material. All costs associated with the patching of defective areas shall be borne by Contractor.

H. Vehicular Traffic

1. Contractor shall not allow vehicular traffic on the asphalt mat surface until the mat surface has cooled to below one hundred twenty degrees (120º) Fahrenheit. Any portion of the asphalt concrete mixture that becomes loose and broken, rutted, or damaged in any way due to vehicular traffic on the asphalt mat surface prior to it cooling to below one hundred twenty degrees (120º) Fahrenheit, shall be removed and replaced with fresh hot asphalt concrete, which shall be compacted to conform with the surrounding area at the specified density.

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Concrete sidewalks, curbs and gutters, ramps.

1.02 RELATED SECTIONS

A. 033001 Cast in Place Site Concrete

1.03 QUALITY ASSURANCE

A. Provide materials in accordance with Section 033001.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete Materials: As specified in Section 033001.

B. Expansion Joints: Premolded joint filler for use in expansion joints shall conform to the requirements of ASTM D-1751 (AASHTO M-213).

C. Reinforcing Steel: ASTM A615 (AASHTO M-31); It shall be free from loose scales, excessive rust, and coatings of any character which will reduce the bond between steel and concrete

D. Welded Steel Wire Fabric: Cold-drawn steel wires or galvanized fabricated into mesh formed by the process of electric welding. The grade of wire shall conform to AASHTO M-32. Welded Steel Wire Fabric shall conform to ASTM A-185 (AASHTO M-55).

E. Dowels: Plain steel, uncoated finish.

F. Curing Compound: Spray on type, MB-429, manufactured by Masterbuilders.

G. Joint Sealant: Asphaltic, pour applied type.

PART 3 – EXECUTION

3.01 FORMING

A. Curb and Gutter

1. Forms may be of wood or metal or any other material at the option of the Contractor, provided that the forms as set will result in a curb, or curb and gutter of the specified thickness, cross section, grade and alignment shown on the Drawings.

2. Forms may be removed on the day following pour if the concrete is sufficiently set that removal can be accomplished without danger of chipping or spalling. Form materials shall be free from warp, with smooth and straight upper edges, and if used for the face of a curb, shall be surfaced on the side against which the concrete is to be placed. Wooden forms for straight work shall have a net thickness of at least one and one-half

inches (1.5”). Metal forms for such a work shall be of a gage that will provide equivalent rigidity and strength. Curb face forms used on monolithic curb and gutter construction shall be a single plank width when the curb face is ten inches (10”) or less, except for those used in curb returns. All forms used in curb returns shall not be less than three-quarters inches (3/4”) in thickness, cut in the length and radius as shown on the Drawings, and held rigidly in place to line and grade by the use of metal stakes and clamps. The curb face form shall be cut to conform exactly with the curb face batter as well as being cut to the required length and radius. Forms shall be of sufficient rigidity and strength, and shall be supported to adequately resist springing or deflection from placing and tamping of concrete.

3. Form material shall be clean and free from defect at the time of use.

4. All forms including back planks of curb shall be set with upper edges flush with specified alignment and grade of the finished surface of the improvements to be constructed, and all forms shall be not less than a depth equivalent to full specified thickness of the concrete to be placed.

5. Forms shall be held securely in place by means of metal stakes driven in pairs at intervals not to exceed three feet (3’), one at the front form and one at the back form. Clamps, spreaders, and braces shall be used to the extent as may be necessary to insure proper form rigidity. Forms for walk and similar work shall be firmly secured by means of stakes driven at intervals not to exceed four feet (4’). Form stakes shall be of sufficient size and be driven so as to adequately resist lateral displacement.

6. Commercial form clamps for curb and gutter may be used provided they fulfill the requirements specified herein.

7. Pump trucks may be used upon approval of the Owner’s Representative. Prior to approval, the Contractor must demonstrate to the satisfaction of the Owner’s Representative that the pumping equipment will not segregate, or in any other way degrade, the concrete. Additional test samples for such alternate placement methods may be taken from the discharge side of the machine for compressive strength determination assurance tests.

8. All forms shall be set to the lines, grade, and dimensions shown on the Drawings. The forms shall be thoroughly braced and secured to resist deformation or displacement under load, and shall be installed to permit easy removal without hammering or prying against the fresh concrete. The top of the forms shall not deviate more than one-eighth inch (1/8”) in ten feet (10’), and the alignment of forms shall be within one-fourth inch (1/4”) in ten feet (10’).

9. Before placement of concrete, steel forms shall be lightly oiled with a good grade of form oil. Excess oil shall be removed by wiping with clean rags, dampened in diesel or fuel oil. Wooden forms may be oiled in the same manner as metal forms, or they may be watered immediately in advance of the placement of concrete. Watering of the form shall be done with clean water of the same quality as that specified for mixing water, and only when the atmospheric temperature is not less than forty degrees (40°) Fahrenheit. Concrete shall not be placed until all forms have been inspected and

approved by the Owner's Representative. Wherever form work is exposed to pedestrian traffic, bridges (not attached to the forms) shall be provided at all regular pedestrian crossings where it is required to maintain safety standards. Barricades and other safety features shall be installed as necessary.

B. Sidewalk

1. Forms shall conform to requirements outlined in Section 321313.3.01.A. Wood forms against unexposed concrete surfaces shall be No. 2 Common Lumber or better. Those against surfaces to be exposed shall be dressed and matched boards of uniform thickness, and widths not exceeding ten inches (10"). Rigid, nonporous and waterproof sheet material may be used provided the end result will be a smooth unmarked concrete surface without waves, fins or other noticeable markings.

2. Plywood conforming to the requirements for form work, as set forth by the American Plywood Association, may be used against both exposed and unexposed concrete surfaces. This plywood shall be not less than five (5) ply and at least nine-sixteenths inch (9/16") thick. Low areas in the subgrade shall be backfilled with classified fill or with suitable native material as directed by the Owner's Representative. The backfill shall then be compacted to ninety-five percent (95%) maximum density and any dry areas in the subgrade shall be thoroughly dampened prior to the time the concrete is placed. No payment will be made for water, and the work of placing and cost thereof shall be considered as incidental to the construction of the concrete sidewalk.

C. Curb Ramp

1. Forms shall conform to requirements outlined in Section 321313.3.01.B.

3.02 REINFORCEMENT

A. Place reinforcement at mid-height of slabs-on-grade.

B. Interrupt reinforcement at expansion joints.

3.03 PLACING CONCRETE

A. Curb and Gutter

1. Prior to the delivery of the first load of concrete for curbs, the Contractor shall furnish rigid straightedges, ten feet (10') or sixteen feet (16') in length, to the Owner's Representative for checking surface uniformity. String shall not be used as a straightedge. Surface irregularities, as measured along the top face of curb and the curb pan, shall not exceed three-sixteenth inch (3/16") within ten feet (10'), or five-sixteenth inch (5/16") within sixteen feet (16'). Non-conforming surfaces shall be subject to rejection by the Owner's Representative. All surfaces rejected by the Owner's Representative shall be corrected by the Contractor at the Contractor's expense.

2. The subgrade shall be properly compacted and brought to specified grade in accordance with the Drawings before placing concrete. The subgrade shall be thoroughly dampened immediately prior to the placement of the concrete. Forms shall not be splashed with concrete in advance of placing.

3. Concrete shall be discharged from transport vehicle to the point of final placement in a continuous manner as rapidly as practicable. The rate of placement shall not exceed the rate at which the various placing and finishing operations can be performed in accordance with these Specifications. Concrete shall not be allowed to free fall more than three feet (3').

4. If concrete is to be placed by the extruded method, the Contractor shall demonstrate to the satisfaction of the Owner's Representative that the machine is capable of placing a dense, uniformly compacted concrete to exact section, line and grade. Extruded curb which does not meet all requirements of the Contract Documents, shall be replaced at the Contractor's expense.

5. Expansion joints shall be placed along all structures, as shown in the Drawings and/or Standard Details, and around all features that project into, through, or against the concrete. An expansion joint shall be constructed at the intersection of sidewalks; between sidewalk crossings and sidewalks; between curbs and sidewalks (except parallel curb); and at the beginning and end of curb returns. Additionally expansion joints shall be constructed every fifty feet (50') where the sidewalk span exceeds seventy-five feet (75') and expansion joints are not required for the above listed reasons. Expansion joint material shall conform to the requirements of ASTM D-1751 (AASHTO M-213). Expansion joints shall not exceed one half inch plus or minus one-eighth inch (1/2"±1/8") in width. Expansion joint material shall extend the full width of the structure and shall be cut to such dimensions that the base of the expansion joint shall extend to the subgrade and the top shall be depressed not less than one-quarter inch (1/4") nor more than one-half inch (1/2") below the finished surface of the concrete. The material shall be of one (1) piece in the vertical dimension and shall be securely fastened in a vertical position to the existing concrete face against which fresh concrete is to be placed. After the concrete has set, the expansion joints shall be filled flush to the finish concrete surface with an approved polyurethane sealant applied according to the manufacturer's recommendation. Before sealing, the joint shall be cleaned of all dirt, gravel, concrete mortar, and other extraneous material. Sealing shall be done in a neat workmanlike manner.

6. Transverse contraction joints, cut to a depth of one inch (1") prior to the final set of the concrete, shall be tooled in the sidewalks at intervals of five feet (5'), and at ten feet (10') intervals in the curb and gutter. Where the sidewalk adjoins the curb (parallel to it), contraction joints in the sidewalk and curb shall be made to match where practicable.

B. Sidewalk

1. The concrete shall be spread uniformly between the forms and thoroughly compacted with a steel shod strikeboard. After the concrete has been thoroughly compacted and leveled, it shall be floated with wood floats and finished at the proper time with a steel float. Joints shall be edged with a one-quarter inch (1/4") radius edger and the sidewalk edges shall be tooled with a one-half inch (1/2") radius edger. After final troweling, sidewalk on grades of less than six percent (6%) shall be given a fine hair broom finish applied transversely to the centerline. On grades exceeding six percent (6%), walk shall be finished by hand with a wood float. Walk shall be re-marked as necessary after final

finish to assure neat uniform edges, joints, and score lines. Unsightly, poorly finished, and sidewalk failing to meet the requirements of the Drawings, Specifications, and this Section will be rejected.

2. The sidewalk shall be divided into panels by scoring one inch (1") deep every five feet (5'). Refer to Sections 321313.3.03.A.5 and 321313.3.03.A.6 for requirements for contraction and expansion joints. The expansion joints shall be placed at all structures such as catch basins and manholes, at driveways, and at all points of tangency and points of curvature. Additional requirements for placing and finishing concrete in cold weather shall be as outlined in Weather Limitations.

3. For all other exposed aggregate concrete sidewalks, Contractor shall float and trowel all surfaces to receive the exposed aggregate finish. Seeding the surface with aggregate shall not be allowed. After the concrete has taken its initial set, the surface aggregate shall be exposed using a water fog spray and brooms to remove the surface matrix. The coarse surface aggregate shall be exposed very lightly, approximately one-sixteenth inch (1/16"). After the concrete has taken its final set, a weak acid wash shall be applied to clean and wash the exposed aggregate surfaces. The weak acid wash shall be thoroughly neutralized and flushed from the finished surface. Under no circumstances shall Contractor allow the acid wash to enter the storm drain lines.

4. Contractor shall protect adjacent construction, plantings, finishings, structures, and the public from damage and harm due to the acid wash. The finished appearance of the exposed aggregate concrete sidewalk shall produce an appearance and texture that matches the adjacent exposed aggregate sidewalk. Any significant difference in texture or appearance between two adjacent concrete panels, as determined by the Owner's Representative, shall result in removal and replacement of concrete panels by Contractor at no additional cost.

5. Contractor shall provide a two foot by two foot (2' x 2') exposed aggregate concrete test panel prior to constructing the exposed aggregate concrete sidewalk. Location of the test panel will be on-site as approved by the Owner's Representative. Notification of providing this test panel shall be made to the Owner's Representative no less than 24 hours prior to making the test panels to allow the Owner's Representative and materials analysis personnel to be present. The Owner's Representative may require the Contractor to provide additional panel(s) if the test panel does not produce an appearance that matches the adjacent exposed aggregate sidewalk.

6. Providing the test panel and any other required test panel shall be considered incidental to the construction of sidewalk and no separate payment shall be made.

C. Curb Ramps

1. Placing Concrete shall conform to requirements outlined in Section 321313.3.03.B.

2. The ramps shall comply with the Americans with Disabilities Act Title II as identified in 28 CFR Part 35 – Nondiscrimination on the Basis of Disability in State and Local Government Services.

3. The Contractor shall construct each curb ramp and install the detectable warning panel(s) in conformance with the Contract Documents and the manufacturer's recommendations.

4. No later than five (5) days prior to construction of the curb ramps, Contractor shall submit to the Engineer for review and approval, a layout drawing for each curb ramp to resolve issues related to pattern repeat, tile cuts, expansion joints, control joints, ramp curves, ramp end returns and surface interfaces, and truncated dome spacing.

5. In accordance with the Americans with Disabilities Act Public Rights-of-Way Accessibility Guidelines (PROWAG), dimension not stated as "maximum" or "minimum" are absolute. All dimensions are subject to conventional industry tolerances, except where the requirement is stated as a range with specific minimum and maximum end points.

6. Conventional industry tolerances recognized by the American with Disabilities Act Accessibility Guidelines (ADAAG) include those for field conditions that may be a necessary consequence of a particular manufacturing process. Information on specific tolerances may be available from industry or trade organizations, code groups, building officials, and published references. (Example: American Concrete Institute Standard Specifications for tolerances for concrete construction and materials (ACI-117).

3.04 STRIPPING FORMS AND FINISHING

A. Curb and Gutter

1. The face form of the curb shall be stripped at such time in the early curing as will enable inspection and correction of all irregularities that appear thereon.

2. Forms shall not be removed until the concrete has set sufficiently to retain its true shape. The face of the curb shall be troweled with a tool cut to the exact section of the curb and at the same time maintain the shape, grade, and alignment of the curb. Both front and back edges shall be troweled to a radius of one-half inch (1/2"). Final finish shall be obtained by brooming the surface, including the troweled edge to a gritty finish after all free moisture has disappeared from the surface. Sprinkling of cement or sand for blotting will not be permitted.

3. It is the intent of this Specification to ensure the highest quality of workmanship in the construction and finishing of P.C.C. curb and gutter.

4. Unsightly or poorly finished surfaces will be considered grounds for rejection of the Work. The top and/or face and gutter of the finished concrete surfaces shall be true and straight, of uniform width and free of cracks, humps, sags, or other irregularities. The finished concrete surface shall not vary more than two hundredths of a foot (0.02') from a ten foot (10') straight edge, except at grade changes or curves. No freestanding water is permitted on slopes at or greater than one percent (1%). No freestanding water deeper than one-sixteenth inch (1/16") is permitted on slopes of less than one percent (1%). The Contractor shall flow test all new concrete curb and gutter. Curb and gutter failing to meet this requirement will be rejected.

5. All defective areas shall be removed and replaced at the Contractor's expense, unless permission to patch is granted by the Owner's Representative. Such permission shall not be construed as an acceptance of the Work or as a waiver of the Owner's Representative's right to require the complete removal of the Work, if in his opinion the patch does not satisfactorily restore the quality or appearance of the surface.

6. Should patching be permitted, the area shall be chipped clean to a depth of one inch (1") perpendicular to the surface and saturated with clean water prior to being patched. The patch shall be made with a mortar extracted from fresh concrete by passing it through a three-eighths inch (3/8") screen. The mortar shall be thoroughly compacted and screeded off slightly higher than the surrounding surface to allow for contracting or setting after the maximum shrinkage has taken place. After one (1) to two (2) hours, the patch shall be troweled to the same finish as the surrounding area and shall be cured as specified herein. The use of special patching material will be permitted if approved by the Owner's Representative.

B. Sidewalk

1. Stripping Forms and Finishing shall conform to requirements outlined in Section 321313.3.04.A.

C. Curb Ramp

1. Stripping Forms and Finishing shall conform to requirements outlined in Section 321313.3.04.A.

3.05 CURING

A. Curb and Gutter

1. Curing compounds shall be applied to all exposed surfaces immediately after finishing. Transparent curing compounds shall contain a color dye of sufficient strength to render the film distinctly visible on the concrete for a minimum period of four (4) hours after application.

2. If, at any time during the curing period any of the forms are removed, a coat of curing compound shall be applied immediately to the exposed surface. The curing compound shall be applied in sufficient quantity to obscure the natural color of the concrete. Additional coats shall be applied if the Owner's Representative determines that the coverage is not adequate. The concrete shall be cured for the minimum period of time set forth below.

3. Curb and gutter constructed of Type I/II Portland Cement Concrete must have been placed and finished a minimum of seven (7) days prior to material being distributed against, or vibrated (compaction) adjacent to the structure.

4. Curb and gutter constructed of Type III Portland Cement Concrete must have been placed and finished a minimum of three (3) days prior to any material being distributed against, or vibrated (compaction) adjacent to the structure.

5. When forms are removed before the expiration of the curing period, the edges of the concrete shall be protected with moist earth, or sprayed with curing compound.

6. Other standard methods of curing the curb and gutter may be used upon approval of the Owner's Representative. Concrete shall not be placed unless curing compounds and necessary equipment for applying such is on the Project site.

B. Sidewalk

1. The materials and procedures outlined in Section 321313.3.05.A shall prevail. The curing agent shall be applied immediately after finishing and be maintained for a period of seven (7) days. The curing agent(s) and/or concrete mixtures shall in no way deter or prevent final finishing of concrete. The use of surface retarders may be permitted if application methods are accepted by the Owner's Representative, in writing, no less than twenty-four (24) hours prior to concrete placement.

2. The Contractor shall have readily available sufficient protective covering, such as waterproof paper or plastic membrane, to cover the pour of an entire day in event of rain or other unsuitable weather.

3. The sidewalk shall be protected against damage or defacement of any kind until it has been accepted by the Owner. Sidewalk which is not acceptable to the Owner's Representative because of damage or defacement shall be removed and replaced at the expense of the Contractor.

4. Additional requirements for curing in cold weather shall be as outlined in Weather Limitations.

C. Curb Ramp

1. Curing shall conform to requirements outlined in Section 321313.3.05.B.

3.06 WEATHER LIMITATIONS

A. Comply with weather limitations specified in Section 033001.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. This Work shall consist of furnishing all materials and placing painted pavement markings. All work shall be in accordance with these specifications and shall be placed at the locations shown on the plans.

PART 2 PRODUCTS

2.01 PAINT FOR PAVEMENT MARKINGS

A. The Contractor shall furnish the name of the company that will manufacture the paint and the location of the plant from where shipments will be made. No material shall be shipped by the manufacturer until it has been sampled, tested, and approved.

B. Traffic Lane Paint shall conform to AASHTO M248, Type III F.

PART 3 EXECUTION

3.01 GENERAL

A. Sequencing of Work.

1. This work shall be done as soon as possible after paving is completed to facilitate placement on clean pavement.

B. Paint Color.

1. All pavement markings shall be yellow except handicap parking symbols and striping shall be blue.

C. Preparation of Surface

1. Paint shall not be applied to pavements which are excessively dirty, damp, or cold. Paint shall not be applied when the pavement temperature is less than 40 degrees F.

2. All dirt, oil, grease, and other foreign matter shall be removed from the areas of the pavement upon which the traffic markings are to be painted by an approved method.

D. Types of Markings.

1. The type and color of the markings shall be as shown on the plans.

E. Width of Lines

1. The width and spacing of all lines shall be shown on the plans.

F. Application

1. The paint shall be applied with atomizing spray type striping machine, approved by the Engineer. The markings shall have clear-cut edges, true and smooth alignment and uniform film thickness. The wet film thickness shall be 17 mils with a nominal variation not to exceed 2 mils.

G. Preliminary Spotting

1. The Contractor shall provide the necessary control points at intervals including all changes of direction and changes in the basic configuration of striping The Contractor shall be responsible for preliminary spotting of the lines to be painted and he must obtain approval for all his spotting before striping may begin.

H. Tolerances

1. The Contractor shall keep his work within the following allowable tolerances:

2. Length of stripe. The longitudinal error within a 20-foot length shall not be more than plus or minus 1 inch.

3. Width of stripe. The width of stripe shall not vary more than plus or minus ¼ inch.

I. Cleanup

1. Contractor shall clean up and remove all overspray.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers all Labor, equipment, material and supervision to complete the water service to the building in accordance with the drawings.

1.02 SUBMITTALS

A. The Contractor shall submit for approval manufacturer's specifications, drawings, and recommendations for all materials incorporated into the project. The submittal shall include manufacturer's published data, engineering data, letter of certification or certified test laboratory report indicating that each material complies with specified standards and other requirements.

B. Contractor shall submit gradation test results for all contractor furnished soils materials to be incorporated into the project. Hydrometer test results shall be required for Contractor furnished classified soils materials to be incorporated into the project.

1.03 RELATED WORK

A. SECTION 312000 EARTH MOVING
B. SECTION 321216 ASPHALT PAVING

1.04 APPLICABLE STANDARDS

A. The most recent revision of the following standards of the American Society for Testing and Materials (ASTM) and the American Association for State Highway and Transportation Officials (AASHTO), the American Standards Association (ASA) and the American Water Works Association (AWWA) are hereby made part of these specifications:

ASTM D3035	Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) based or Controlled Outside Diameter.
ASTM D3261	Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for PE Plastic Pipe and Tubing.
ASTM D3350	Specification for Polyethylene Plastic Pipe and Fitting Materials
AWWA C-115	Rubber Gasket Joints for Cast Iron and Ductile Iron Pipe with Threaded Flanges.
AWWA C-500	Gate Valves.
AWWA C-502	Dry Barrel Fire Hydrants.
AWWA C-601	Disinfection of Water Mains.
AWWA C-901	Standard for Polyethylene (PE) Pressure Pipe and Tubing.

1.05 TRENCH COMPACTION TESTING

A. Where compaction density is specified, the maximum density shall be determined in accordance with the current requirements of ASTM D 4253.

B. The in-place soil density may be determined by use of:
Nuclear densometer - ASTM D 2922.
Sand cone - ASTM D 1556.
Rubber balloon - ASTM D 2167.

C. Compaction tests shall be taken on each lift of fill or backfill, including trenches, at the average rate of one test per 200 feet of trench. Failing tests shall be retested at no additional cost to the Owner.

D. A gradation test, in accordance with ASTM D 422, shall be performed on each type of material used in fills and backfills. If material is to be non-frost susceptible, hydrometer tests shall be performed in accordance with ASTM D 422.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. Ductile Iron (DI) Pipe:

1. Ductile iron pipe is to be cement mortar lined, conforms to the requirements of AWWA C151, and has a minimum pipe wall thickness meeting Class 52 requirements. The cement mortar lining is to conform to the requirements of AWWA C104/ANSI A24.1. At least 10% of the pipe delivered is to be gauged full length of the pipe and marked as such.

2. All fittings shall have pressure class ratings not less than the pressure class rating of the pipe to which they are joined.

3. The material shall be listed by the National Sanitation Foundation (NSF) for potable water service and shall bear markings on the pipe indicating NSF listing for potable water service.

B. Fittings and Gaskets.

1. Butyl rubber gasket joints shall conform to AWWA Specification C-111. Provide 1/8 inch thick cloth inserted rubber full face type meeting the requirements of ANSI B16.21 and AWWA C207. Provide gasket materials free from corrosive alkali or acid ingredients and suitable for use in potable water service.

2. Iron fittings are to have exterior and interior surfaces coated with fusion bonded epoxy in accordance with AWWA C116/A21.13-09.
Unless otherwise indicated on the Drawings, rubber gaskets for iron pipe is to conform to AWWA C111.

3. Ductile and cast iron fittings are to be a minimum of two hundred fifty pound (250#) pressure rating, flange, mechanical joint or bell, lined or unlined. Fittings must conform to the requirements of AWWA C110/ANSI A21.10 or C153 A21.53-06.

4. Fittings with nut and bolts are to utilize carbon steel or stainless steel nuts and bolts. Fittings with carbon steel bolts and nuts must conform to the dimensional and material standards as outlined in AWWA C111 and C115 and be factory coated with a blue fluoropolymer coating system. Fittings with stainless steel bolts and nuts must conform to the dimensional standards as outlined in AWWA C111 and C115 and the material standards in ASTM F593 and F594 with a minimum tensile strength of 75,000psi. Bolts and nuts must have imprinted markings indicating the material and grade of the metal used in fabrication.

2.02 VALVES AND VALVE BOXES

A. GATE VALVES:

1. Gate valves shall be iron body, fully bronze mounted, double disc, resilient seat valves. Valve shall comply with AWWA Specification C-509. All valves shall have non-rising stems, an O ring seal, a two-inch square operating nut, and open counterclockwise. Valves shall have flanged ends.

2. Manufacturer: Mueller, or approved equal.

B. VALVE BOXES:

1. Valve boxes shall be cast iron of sliding adjustable height type with round bottom hood sections to fit over the top of the valve. The top

section shall be recessed to receive a closed fitting "eared" lid with the word "water" cast into it. Casting shall be smooth with a 5/16" minimum thickness and a minimum of 5" internal diameter and of sufficient length to extend from the pipe to the ground surface. Valve box sections shall be dipped in coal-tar pitch. Dust pans shall be installed in all valve boxes including hydrant valves.

2.03 FIRE HYDRANTS

A. Fire hydrants shall be conform to the requirements of AWWA C-502 for Dry barrel Fire Hydrants. Hydrants shall be American Darling B-62-B. No substitute will be allowed. Provide hydrant with flanged connection compatible with flanged connection to hydrant leg. Furnish hydrant with break away traffic flange.

B. All "single pumper" hydrants shall have two 2½" hose connections and one 4½" pumper connection. Main valve shall be 5 ¼".

C. Painting and coating shall be in accordance with the cited AWWA Specification for dry barrel fire hydrants, Section 4, Article 4.2 (Paint). Color of paint shall be "Caterpillar Yellow".

D. The adjustment of hydrant barrel and valve box to the required finish grade will be at the expense of the Contractor.

E. All hydrants shall have drain outlets at the base of the barrel. Plugs shall be removed prior to installation.

F. Operating nozzle nuts shall be pentagon shaped with one and one half inch (1 ½") point to flat dimension.

2.04 CONCRETE

A. General.

1. Concrete shall be in accordance with Section 03300.

2. Concrete for thrust blocks and piping supports shall have a minimum 28 day compression test strength of 3,000 psi, maximum 1½" aggregate, and maximum slump of 3".

PART 3 - EXECUTION

3.01 UNDERGROUND PIPING

A. Construction Staking

1. The Contractor shall furnish the following surveys for construction staking:

a. The limits of clearing will be flagged by stringing ribbons, placing stakes, or otherwise identifying the boundary of the areas to be cleared.

b. Two offset hubs with guard stakes shall be placed to mark the offset and cut to the invert of each tee, bend, valve, hydrant, vertical grade change, and service connection on the waterline. On longer lines, additional stakes shall be provided to mark line and grade at two hundred foot intervals.

B. Line and Grade

1. Horizontal distances are from center to center of fittings or appurtenances, unless otherwise noted. Elevations are to pipe invert.

2. The Contractor shall provide a competent surveyor to maintain line and grade during all pipe laying operations with a transit and engineer's level at no additional cost to the Owner.

3. The pipe shall be so laid in the trench that after the line is completed the interior surface thereof conforms accurately to the grades and alignment given on the plans. A maximum 0.2 foot deviation from design elevation and alignment will be allowed. The pipe shall be straight to the eye, unless otherwise called for on the plans.

4. All adjustments to line and grade shall be done by scraping away or filling the earth under the body of the pipe and not by blocking or wedging up.

5. Any time pipe has to be deflected around curves where no fittings are used, the line and grade shall be staked at intervals of each length of pipe.

6. All survey work shall be incorporated to provide complete as-built drawings of the water system

C. Trench Excavation

1. General

a. Contractor shall accomplish all excavation required by the contract drawings through whatever substances encountered. All excavation shall be accomplished in accordance with the State of Alaska safety code and other applicable safety requirements.

b. Unauthorized excavation below the required grade line shall be backfilled with approved material and mechanically compacted to 95% of maximum density at the expense of the Contractor.

c. If material encountered in the trench is unsuitable for use as trench backfill as determined by the Owner's Representative, the material shall be designated as 'Unusable Excavation' and hauled off and disposed of at a Contractor furnished disposal site. Type II classified material shall then be provided by the Contractor to replace the disposed material.

2. Water Removal

a. During excavation and pipe installation, the Contractor shall remove by pumping or other approved means, all water above the bottom of trench.

3. Limits on Open Trenches

a. The maximum length of open trench shall be 400 feet; however, should this maximum length be considered detrimental to public safety, it may be reduced at the discretion of the Owner's Representative. No more than 100 feet of trench may remain open over night.

D INSTALLATION

1. Pipe

a. Water line may be bedded in in-situ material.

b. All pipe shall be laid in compliance with AWWA C-600 with a minimum of 10 feet of cover and shall not be less than 10 feet below finished grade of road centerline. True line and grade shall

be kept with the spigot end fully seated into the adjacent bell. Backfill under and around the pipe shall be fully tamped so that no voids exist that will allow bridging or settlement of the pipe.

c. All faulty workmanship and all materials found to be defective before or after installation shall be replaced, repaired or corrected to meet the specification requirements without additional expense to the Owner.

d. Cutting of pipe shall be done in a workmanlike manner as recommended by the manufacturer and approved by the Owner.

e. Open ends of pipe and appurtenances shall be protected with an approved plug at all times to prevent earth or other substances from entering the pipe.

2. Joints and Fittings

a. Pipe Fusion all joints for HDPE pipe and fittings shall be accomplished by butt fusion. All joining shall be accomplished in accordance with the pipe manufacturer's recommendations as to equipment and technique. The fusion operation shall be performed by an individual who has demonstrated the ability to fuse polyethylene pipe in the manner recommended by the pipe manufacturer. The individual performing the fusing procedure must hold a current certification for fusing HDPE in accordance with the Plastic Pipe Institute standard TR-33 Butt Fusion Joining Procedure.

b. Joining pipe to valves and saddles shall be made with flanged joints.

3. Pipe Deflection

When it is necessary to deflect HDPE pipe from a straight line in either the vertical or horizontal plane, or where long radius curves are permitted, the amount of deflection shall not form a radius of less than 40 pipe diameters.

4. Joint Restraint at Hydrants.

a. Unless tie rods are used, concrete thrust blocks shall be installed at all tees, crosses, and bends, or combination of bends, 11¼ degrees or greater in deflection. Precast blocks may be used

where approved by the Owner. Precast blocks shall bear on undisturbed trench walls.

No voids will be allowed between the bearing portion of the precast block and the undisturbed trench wall.

b. Thrust blocks shall provide a minimum of 6 square feet of bearing area against surrounding soils.

5. Tie Rods

All water service lines used for fire protection shall have tied back joints for at least 40 feet from each end and from each fitting. Use 3/4" threaded steel rod, coated with a heavy duty bituminous coating, applied per manufacturer's recommendations. Tie rods shall be connected to the pipe at intervals less than 27 feet.

6. Thaw and Continuity Strap Wire

The wire shall be insulated No. 2 AWG stranded copper conductor rated for 600V. Insulation shall be HMWPE or approved for use in buried low temperature service. Split bolts or mechanical bolt connection of the wires will not be allowed

7. Flushing

a. Before the pressure or leakage tests are performed and before the system is sterilized, all newly laid mains shall be thoroughly flushed to remove all foreign material. The Contractor shall provide for "open bore" flushing so that all parts will be cleaned. The use of fire hydrants for this initial flushing will not be permitted. Flushing times shall be at the discretion of the Owner and utility.

b. In the event repeated flushing is necessary to approve and certify the system, such flushing shall done at the expense of the Contractor.

c. A representative of the Owner and Contractor shall be present for all flushing and testing.

8. Connect to Existing Waterline

a. Connections to the existing waterlines shall be coordinated with the City of Kenai Public Works Department. The City will shut off the water for the Contractor when required. The Public Works Director shall be given 24 hours notice prior to any

shutdown of existing water facilities. Maximum allowable shutdown time shall be four hours.

9. Sewer Line Crossing

   a. The waterline shall not cross a sewer line with less than 18" clearance. If an existing sewer line is found to be closer than 18" from the proposed waterline, deflect the line as required to provide 18" clearance. Advise Owner's Representative of proposed changes as soon as possible.

10. Valves

   a. Valves and valve boxes shall be installed where shown on the plans. Valves shall have the interiors cleaned of all foreign matter before installation. The valve shall be inspected in the open and closed position to insure that all parts are in working condition.

   b. Stuffing boxes shall be tightened prior to installation. The base of the hood section shall rest on compacted fill and should be approximately two inches above the flanged joint of the valve dome.

   c. The valve box assembly shall be plumb and accurately centered over the valve operating nut. The top section shall be so set as to permit vertical adjustment above or below finished grade. On gravel streets the top of the valve box shall be set three inches below the surface and on paved streets one quarter inch (¼) below finished grade. Earth fill shall be carefully compacted around each valve box. Burlap or rubber shall be wrapped around the base of the valve box. Dust pans shall be installed in all valve boxes. An alignment pole shall be used on each valve to insure the bottom and 10 foot sections are straight.

   d. Install steel pipe valve marker posts, painted yellow with black letters facing valve box with number of feet to valve box.

11. Fire Hydrants

   a. Fire hydrant assemblies shall be installed where shown on the plans. Hydrant barrels shall be installed plumb. The hydrant

barrel shall be wrapped full height with two layers of four-mil polyethylene, securely fastened to the barrel.

b. The Contractor shall install hydrants with the flange a minimum of 2 inches and a maximum of 6 inches above finished grade. Backfill along the hydrant lead shall be in accordance with the section covering pipe backfill and compaction.

c. Hydrants shall have tie rods from hydrant tee to valve and valve to hydrant barrel using 3/4" OD black iron or mild steel coated with a bituminous corrosion resistant material.

d. All hydrants shall be installed with separate thaw pipes for the barrel and supply leg.

e. If shown on the drawings, install guard posts in accordance with the details.

E. BACKFILL

1. General

a. After the lines have been inspected and tested, the trenches shall be backfilled. Backfill may be accomplished prior to testing at the Contractor's risk.

b. Unsuitable or surplus excavated materials shall be removed from the area. Contractor shall furnish additional backfill materials, if required, from off-site sources.

c. The Contractor shall carefully place and thoroughly compact backfill around and above the pipe to 95 percent of maximum dry density.

d. Material shall be compacted in maximum 12 inch lifts. The Owner's Representative may require shallower lifts to facilitate proper compaction.

F. TESTING

1. General

a. After open bore flushing, and prior to installing water service connections, all newly laid water mains and appurtenances shall be subjected to pressure and leakage tests as specified herein. Said testing shall be done at the expense of the Contractor. This work shall be considered incidental to the installation of the water utility system, and shall not be paid for separately.

b. A representative of the Owner, the City of Homer, and the Contractor shall be present for all testing.

2. Pressure Test

a. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air vents are not located at all high points, the Contractor shall install corporation cocks at such points so that air can be expelled as the is filled with water. The newly laid piping, or any valved section thereof, shall be subjected to a hydrostatic pressure test of 150 psi. After the required test pressure has been reached, the pumping will be terminated. If the pressure (150 psi) remains constant for 30 minutes without the aid of a pump, the waterline will not be subjected to any further hydrostatic test. If the pressure does not remain constant for 30 minutes, a leakage test will follow. All valves within the section of line being tested will be closed and reopened after the required pressure (150 psi) has been obtained and prior to the 30 minute constant pressure test.

3. Continuity Test

a. The electrical continuity test will be taken with a gasoline powered welder. The continuity will have to register a minimum load of 600 amperage for a period of 15 minutes. Such test will be performed by the Contractor with a representative from the Owner present.

G. DISINFECTION

1. General

a. After pressure, leakage, and continuity tests and before being placed into service, all newly laid water mains shall be thoroughly disinfected by the Contractor.

2. Method of Disinfection

a. Calcium hypochlorite solution shall be supplied by Contractor for sterilization.

b. The chlorinating agent shall be applied at the beginning of the section adjacent to the feeder connection and shall be injected through a corporation cock, hydrant, or other connection insuring treatment to the entire line. Water shall be fed slowly into the new line with chlorine applied in amounts to produce a dosage of 40 to 50 ppm through the entire extent of the new system. The disinfecting agent shall be allowed to stand in the mains for at least 24 hours.

c. A residual of not less than 5 ppm chlorine shall remain in all parts of the line after 24 hours of detention time. During the chlorination process, all intermediate valves and accessories shall be operated. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. After chlorination, all water with a higher chlorine content than that at the permanent source of supply shall be thoroughly flushed from all parts of the new system.

d. All test coppers and air vent coppers shall be disconnected and removed from the main and the corporation stop turned off before the line is accepted.

H. Existing Utilities

1. Contractor is responsible for the protection of all existing underground, surface and overhead utilities and for the protection of adjacent structures. Plan locations of existing underground facilities are to be considered approximate only and shall be verified with the owning utility by the Contractor. The methods used to protect existing utilities, appurtenances, structures, etc., shall be subject to the approval of the Owning Agency.

2. Contractor shall verify location of and elevations of existing waterlines that new lines tie into prior to construction.

I. As-Built Drawings

1. The Contractor shall provide a red-lined blueline drawing prior to final payment showing as built information for the following:

   a. Horizontal location and elevation at least every 100 feet along the pipe and of all tees, bends, changes in grade and end of any dead-end runs.

   b. Horizontal location for all valves, hydrants, bleeders, change in pipe size or class. In addition to stationing, location of valves shall also be shown by three (3) swing ties from each valve to appropriate prominent features. Swing ties shall not exceed 100' in length without the written consent of the Owner's Representative.

   c. Horizontal and vertical location of any other utilities intercepted in the trench.

   d. Type and depth of bedding used, if any.

   e. Accurate detail and location of any unique tie-ins, special combination of fittings, etc.

   f. On service key boxes, show station on mainline for corporation stop, length and size of service line, location of key box by 2 or more swing ties and station and offset to terminus. Swing ties to be as close to 90 degrees to one another as possible and shall not exceed 100' in length.

   g. If adequate as-built data is not provided as defined above, the Owner may perform an as built survey and deduct the cost from moneys due the Contractor.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Work included:
The work under this section consists of providing all operations pertaining to the construction required for sanitary sewer service connections.

B. Related Work Specified Elsewhere

Earth Moving	Section 312000

1.02 QUALITY ASSURANCE

A. Qualifications of Workmen:

1. To perform the work of this section, employ at least one thoroughly experienced supervisor who is familiar with the materials, equipment, and operations required, and who shall be present at all times during actual construction and direct all operations under this section.

2. In the acceptance or rejection of work of this section no allowance will be made for lack of skill on the part of the workmen.

3. Employ qualified engineers or surveyors for the establishment of lines and grades.

B. Referenced Standards

The latest revision of the following standards of the the American Standards Association (ASA):

ASA A-21.10	Cast Iron Fittings
ASA A-21.11	Cast Iron Joints

1.03 SUBMITTALS

Submit manufacturer's product data and installation instructions for each product specified for installation.

PART 2 PRODUCTS

2.01 EQUIPMENT

The Contractor shall utilize equipment both suitable for the work intended and appropriate for the weather and conditions encountered.

2.02 MATERIALS

A. Pipe and Fittings.

All sanitary sewer service connects shall be constructed with hub and spigot style cast iron pipe and fittings with “Ty-seal” joints.

1. Pipe shall and fitting shall conform to ASTM A-74, ANSI A112.5 and Federal Spec WW-P-401E.
2. Gaskets shall be neoprene and shall conform to ASTM C-564.

B. Insulation

Insulation shall be DOW Styrofoam “HI-40” extruded polystyrene ‘blueboard’ and shall be furnished in 2’ or 4’ wide x 8’ long x 2” thick sheets.

C. Saddle

Saddle at main shall be Romac CB-4.28 saddle or equal and shall be secured to the main with a single, 304 stainless steel band of three and one-half inches (3-1/2”) inches or more in width.

PART 3 EXECUTION

3.01 JOB CONDITIONS

A. Inspection:

Prior to beginning any of the operations of this section, become thoroughly familiar with the site, site conditions, and all portions of the work affected by the installation of the sewer system.

B. Discrepancies:

In the event of discrepancy, ambiguity, interference, or any other unanticipated condition which might impede timely installation under this section immediately notify the Owner's Representative and do not proceed in the questioned areas until resolution or clarification has been obtained.

C. Survey:

The Contractor shall be responsible for all construction surveying of underground sewer pipe utilities .

3.02 INSTALLATION

A. TRENCH EXCAVATION AND BACKFILL

This work shall consist of all excavation and backfill required for sewer service installation and all other related work as specified in this section.

1. Excavation

a. All excavation shall be unclassified and the Contractor shall do all excavation of whatever substances encountered, including rock and frozen ground, to the depth shown on the plans. where distinct surface layers are encountered, of topsoil, clay, silt, peat or other materials undesirable for inclusion in the backfill, these materials shall be segregated into separate stockpiles during the excavating.

b. Survey. Lines and grades shall be carried by means of transit and level, or approved equivalent. Whenever there is an indication of a discrepancy in grade, the Owner's Representative shall be consulted and the grade changed or approved before proceeding with work.

c. Utilities:
All water lines, sewers, gas lines, or other utilities encountered in excavation of the trenches or appurtenances shall be supported and protected from injury throughout the entire construction period until adequate backfill has been completed.

d. Water Removal:
Ground adjacent to the excavations shall be graded to prevent water from running into the trench. The Contractor shall remove, by pumping or other means, any water accumulated in the excavation which is detrimental to the proposed installation of the sewer lines, appurtenances and structures.

2. Backfill.

a. Bedding. The service connections shall be bedded with material excavated from the trench. The bedding shall be laid the full extent of ditch and up to the spring line of the service connect.

b. The remainder of the backfill shall be free of extraneous material such as trees, stumps, trash and large boulders. Backfill shall be

placed in lifts and compacted in a manner such that 95% of maximum density is obtained.

B. PIPE LAYING

1. Pipe laying shall in all cases proceed upgrade with the spigot ends of the pipe pointing in the direction of the flow. Each pipe shall be laid true to line and grade and in such a manner as to form a close concentric joint with the adjoining pipe. The alignment of the installed pipe shall appear straight to the naked eye. Each section of pipe shall be handled carefully and placed accurately; the spigot end shall be fully inserted. Care shall be exercised to avoid over-insertion. Each section of pipe shall be properly supported to insure true alignment and an invert which is smooth and free from roughness or irregularity.

2. At all times, when work is not in progress, open ends of pipe and fittings shall be securely and satisfactorily closed so that no undesirable substances will enter the pipe or fittings.

3. Minimum slope shall be 2 % for 4” pipe and 1% for 6” pipe.

C. Main Line Tap.

1. Taps shall be made with a mechanical hole cutter as manufactured by the Pilot Manufacturing Company or equal. Tee and wye saddles will be allowed on mains twelve inches (12”) and larger. Tee saddles will be the only saddles allowed on mains smaller than twelve inches (12”).

2. All service connections to sanitary sewer mains shall be approved cast iron or “Ty-seal” pipe. Saddles shall be placed over a hole sawed no larger than one-eighth inch (1/8”) larger than the inside diameter of the service line. The strap(s) shall be tightened in accordance

END OF SECTION

KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

KENAI, ALASKA

Project No.: 21014.01

CONFORMED CONSTRUCTION DOCUMENTS

Issue Date: 12/17/2021

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AK Corp. Authorization AECC561

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BIM 360://21014.01 KIT Tribal Courthouse/21014.01 KIT Tribal Courthouse R20.rvt

ARCHITECTURAL ABBREVIATIONS

&	AND	F.O.S.	FACE OF STUD	PLYWD	PLYWOOD
∠	ANGLE	F.O.	FACE OF (Conc. etc.)	PR	PAIR
@	AT	F.R.P.	FIBER REINFORCED PANEL	PREFAB	PREFABRICATED
CL	CENTERLINE	FRPF	FIREPROOFING	PRMA	PROTECTED MEMBRANE ROOF ASSEMBLY
o	DEGREE	FRT	FIRE-RETARDENT TREATED	PROJ	PROJECT
#	NUMBER	FT	FOOT OR FEET	PT	POINT AND PAINT
		FTG	FOOTING	P.T.	PRESERVATIVE TREATED
ABV	ABOVE	FURR	FURRING	PTD	PAPER TOWEL DISPENSER
AC	ASPHALTIC CONCRETE	FUT	FUTURE	PVC	POLYVINYL CHLORIDE
ACP	ACOUSTICAL CEILING PANEL				
ACT	ACOUSTICAL CEILING TILE	GA	GAUGE	R	RISER OR RADIUS
ACOUS	ACOUSTICAL	GAL	GALLON	R.D.	ROOF DRAIN
ADD	ADDITION	GALV	GALVANIZED	REF	REFERENCE
AFF	ABOVE FINISH FLOOR	G.B.	GRAB BAR	REFR	REFRIGERATOR
AHU	AIR HANDLING UNIT	G.I.	GALVANIZED IRON	REINF	REINFORCING
ALT	ALTERNATE	GL	GLASS	REQ	REQUIRED
ALUM	ALUMINUM	GT	GLASS TYPE	R.H.	RIGHT HAND
APPROX	APPROXIMATE	GWB	GYPSUM WALL BOARD	R.L.	RAIN LEADER
ARCH	ARCHITECTURAL	GYM	GYMNASIUM	RM	ROOM
ASPH	ASPHALT	GYP.	GYPSUM	R.O.	ROUGH OPENING
AVG	AVERAGE			R.O.W.	RIGHT OF WAY
		H.B.	HOSE BIB	RTU	ROOF TOP UNIT
BD	BOARD	H.C.	HOLLOW CORE		
BLDG	BUILDING	HDWD	HARDWOOD		
BLKG	BLOCKING	HDWR	HARDWARE	S	SOUTH
BLW	BELOW	H.M.	HOLLOW METAL	SAN	SANITARY
BM	BENCH MARK	H.M.F.	HOLLOW METAL FRAME	S.C.	SOLID CORE
B.O.	BOTTOM OF	HORIZ	HORIZONTAL	SCHED	SCHEDULE
B.S.	BOTH SIDES	H.P.	HIGH POINT	SE	SOUTHEAST
BTU	BRITISH THERMAL UNIT	HR	HOUR	SECT	SECTION
BUR	BUILT-UP ROOF	HT	HEIGHT	SHEATH	SHEATHING
		HW	HOT WATER	SHT	SHEET
CAB	CABINET	HWY	HIGHWAY	SIM	SIMILAR
C.B.	CATCH BASIN			SND	SANITARY NAPKIN DISPENSER
CEM	CEMENT	I.D.	INSIDE DIAMETER	SPEC	SPECIFICATIONS
C.I.	CAST IRON	(") OR IN	INCHES	SQ	SQUARE
CIRC	CIRCULAR	IHM	INSULATED HOLLOW METAL	S.S.	SANITARY SEWER
CLG	CEILING	INSUL	INSULATION	S.ST.	STAINLESS STEEL
CLR.	CLEAR	INT	INTERIOR	STD	STANDARD
C.M.P.	CORRUGATED METAL PIPE	JAN	JANITOR	STL	STEEL
CMU	CONCRETE MASONRY UNIT	JT	JOINT	STOR	STORAGE
COL	COLUMN			STRUCT	STRUCTURAL
COMP	COMPOSITION	KIT	KITCHEN	ST.S	STORM SEWER
CONC	CONCRETE			SUSP	SUSPENDED
CONSTR	CONSTRUCTION	LAB	LABORATORY	SV	SHEET VINYL
CONT	CONTINUOUS	LAM	LAMINATE OR LAMINATED	SW	SOUTHWEST
COOR	COORDINATE	LAV	LAVATORY	SYM	SYMMETRICAL
CORR	CORRIDOR	LB	POUND		
C.R.	COLD ROLLED	LH	LEFT HAND	TB	TACKBOARD
C.R.C.	COLD ROLLED CHANNEL	LL	LIVE LOAD	TBHM	THERMALLY- BROKEN HOLLOW METAL
C.T.	CERAMIC TILE	L.O.W.	LIMITS OF WORK	TEL	TELEPHONE
CTR	CENTER	L.P.	LOW POINT	TEMP	TEMPORARY
				TERR	TERRAZZO
DBL	DOUBLE	MAT'L	MATERIAL	T&G	TONGUE AND GROOVE
DEPT	DEPARTMENT	MAX	MAXIMUM	THRU	THROUGH
D.F.	DRINKING FOUNTAIN	MECH	MECHANICAL	T.O.	TOP OF (eg CONCRETE)
DET	DETAIL	MET OR MTL	METAL	T.O.S.	TOP OF STEEL
DIA	DIAMETER	MFR	MANUFACTURER	TV	TELEVISION
DIAG	DIAGONAL	MH	MANHOLE	TYP	TYPICAL
DIM.	DIMENSION	MIN	MINIMUM OR MINUTE		
DISP	DISPENSER	MISC	MISCELLANEOUS	UAA	UNIVERSITY OF ALASKA ANCHORAGE
DL	DEAD LOAD	M.O.	MASONRY OPENING	UL	UNDERWRITERS LABORATORY
DN.	DOWN	MULL	MULLION	UNFIN	UNFINISHED
DS	DOWNSPOUT			UNO	UNLESS NOTED OTHERWISE
DWG	DRAWINGS	N	NORTH		
		NE	NORTHEAST	VCT	VINYL COMPOSITION TILE
E	EAST	NIC	NOT IN CONTRACT	VERT	VERTICAL
(E)	EXISTING	NO	NUMBER	VEST	VESTIBULE
EA	EACH	NOM	NOMINAL	VR	VAPOR RETARDER
E.I.F.S.	EXTERIOR INSULATION & FINISH SYSTEM	NTS	NOT TO SCALE	VTR	VENT THROUGH ROOF
ELEV	ELEVATION	NW	NORTHWEST		
ELEV	ELEVATOR			W	WEST
ELEC	ELECTRICAL	O	OVER	W/	WITH
EMB	EMBOSSING	O.C.	ON CENTER	WC	WATER CLOSET
EQ	EQUAL	O.D.	OUTSIDE DIAMETER	WD	WOOD
EQUIP	EQUIPMENT	OFD	OVERFLOW DRAIN	W/O	WITHOUT
E.G.	EACH SIDE	OFF	OFFICE	WP	WATERPROOF
EXIST	EXISTING	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED	WT	WEIGHT
EXP	EXPOSED				
EXP.AGG.	EXPANSION EXPOSED AGGREGRATE	OFOI	OWNER FURNISHED, OWNER INSTALLED		
EXP.JT.	EXPANSION JOINT EXTERIOR	OH	OVERHEAD		
		OPNG	OPENING		
F.B.	FLAT BAR	OPP	OPPOSITE		
F.D.	FLOOR DRAIN				
FDN	FOUNDATION	PARA	PARALLEL		
F.E.	FIRE EXTINGUISHER	PART	PARTITION		
F.E.C.	FIRE EXTINGUISHER CABINET	PERF	PERFORATED		
FIN	FINISH	PERM	PERMANENT		
FF	FACTORY FINISH(ED)	PERP	PERPENDICULAR		
FF	FINISH FLOOR	P.I.C.	PRECAST INSULATED CONCRETE		
FLUOR	FLUORESCENT	PL	PLATE		
F.O.B.	FACE OF BLOCK	P.LAM	PLASTIC LAMINATE		
F.O.F.	FACE OF FINISH	PLAST	PLASTER		

PROJECT DESCRIPTION

RENOVATION/EXPANSION OF EXISTING KENAITZE INDIAN TRIBE COURTHOUSE BUILDING.

STATE MAP

VICINITY MAP

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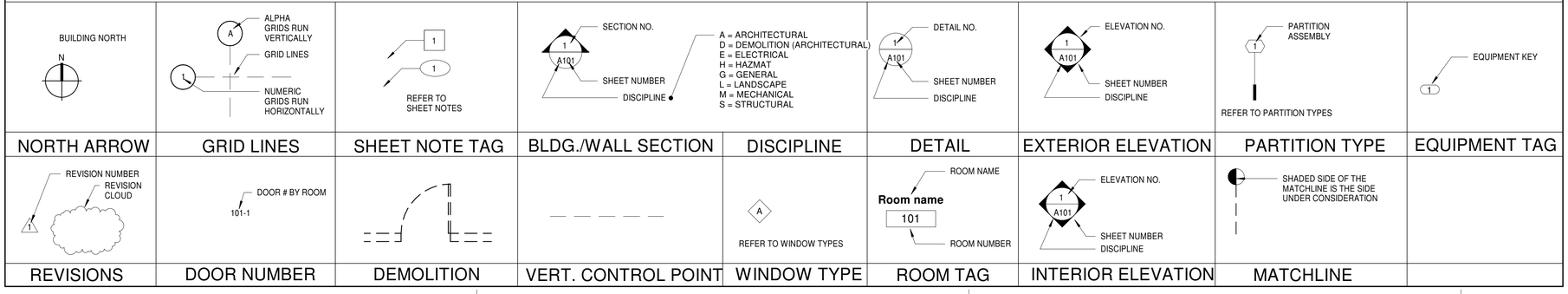
E5.01	ONELINE DIAGRAM, PANEL SCHEDULES

ARCHITECTURAL DRAWING CONVENTIONS



GENERAL PROJECT NOTES

1. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THE BUILDING CODES OUTLINED ON THE LIFE SAFETY PLAN, AND ALL OTHER STATE AND LOCAL CODES, INCLUDING ALL AMENDMENTS.
2. ALL WORK SHALL CONFORM TO THE AMERICAN DISABILITIES ACT (A.D.A.) ACCESSIBILITY GUIDELINES FOR BUILDING AND FACILITIES (A.D.D.A.G.) AND A.N.S.I. 117.1 UNLESS NOTED OTHERWISE.
3. ALL WALL AND CEILING FINISHES CHAPTER 8 IBC AND NFPA REQUIREMENTS
4. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF CONCRETE, FACE OF C.M.U., TO CENTERLINE OF STRUCTURAL COLUMN, OR TO STRUCTURAL GRID-LINE UNLESS NOTED OTHERWISE.
5. DIMENSIONS NOTED AS 'CLEAR' (OR CLR.) SHALL BE TO FINISHED FACE.
6. DO NOT SCALE THE DRAWINGS TO OBTAIN CONSTRUCTION DIMENSIONS. DRAWINGS ARE INTENDED TO PROVIDE INFORMATION FOR CONTRACTORS DETERMINATION OF SCOPE OF WORK.

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KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by JEWE	Date 12/17/2021
Checked MH	Job No. 21014.01

Sheet Contents
GENERAL NOTES, ABBREVIATIONS, LOCATION MAP AND SHEET INDEX

Sheet No.
G100

Plot Date Time: 12/17/2021 8:42:21 AM

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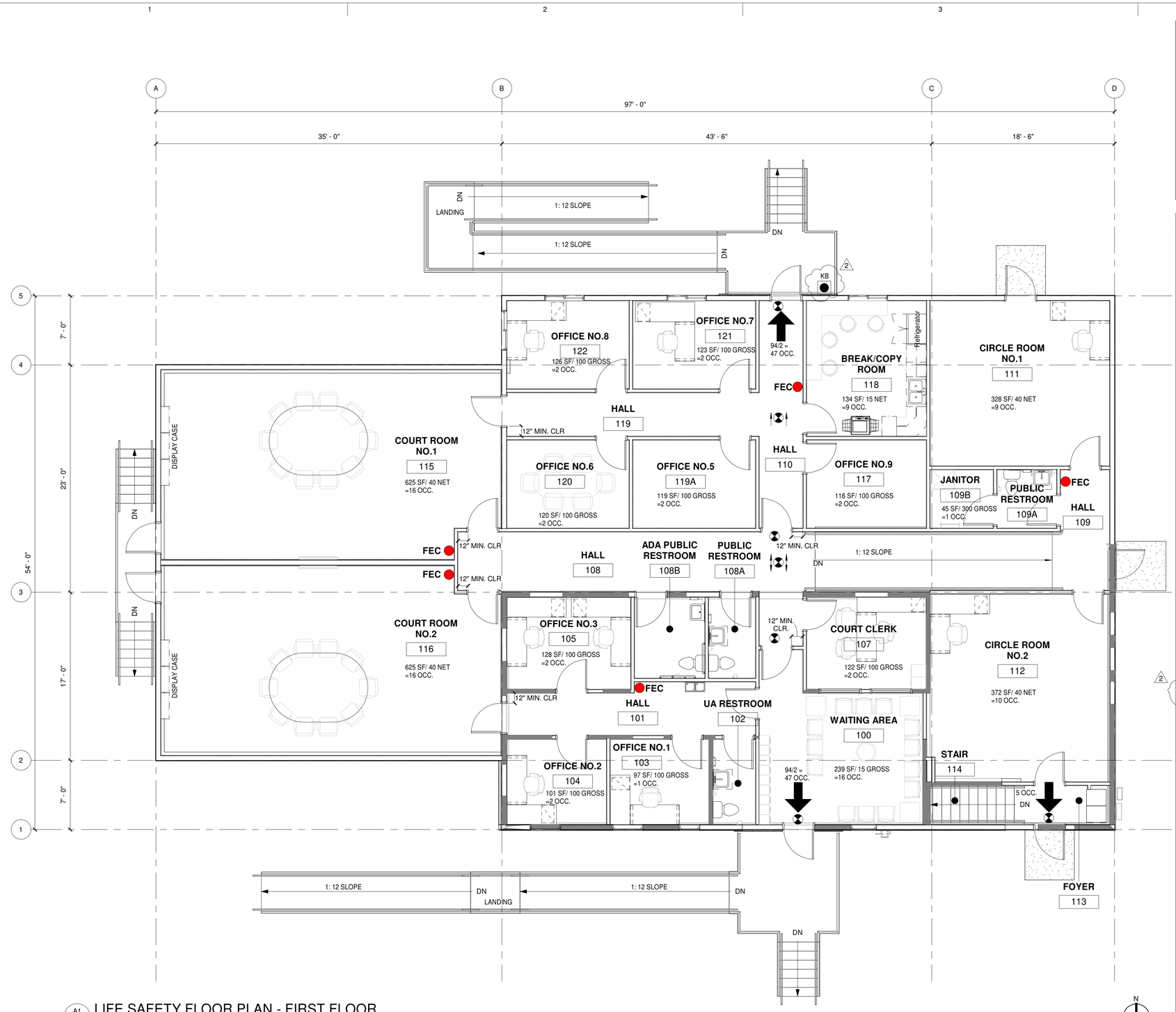

A1 / LS101 LIFE SAFETY FLOOR PLAN - FIRST FLOOR

3/16" = 1'-0"

N

PLAN NORTH

LIFE SAFETY PLAN LEGEND

EXIT SIGN LOCATION

FEC — FIRE EXTINGUISHER UL-RATED: 2A-10B:C (IN SEMI-RECESSED WALL CABINET)

FE — FIRE EXTINGUISHER UL-RATED: 2A-10B:C

2 KB — NEW KNOX BOX LOCATION. RELOCATE FROM EXISTING KNOX BOX LOCATED AT THE SOUTH ENTRY, COORDINATE WITH THE FIRE DEPARTMENT FOR LOCATION

EXIT DISCHARGE

CODE INFORMATION

CODE ANALYSIS
TRIBAL COURT

A. Zoning Analysis

This property is zoned Townsite Historic (TSH Zone).

Land Use:

This is a Conditional Use in the Townsite Historic zoning district.

Design Standards for Off-Street Parking: KMC section 14.25.045 (d) (1) requires paving. ***Parking to be paved.***

Parking: (14.20.250 (b) (8) Off-Street Parking Requirements)

For Courthouses, Based on typical occupancy, eighty percent (80%) of the sum of the following: One (1) per four (4) fixed seats plus five (5) per courtroom plus one (1) per fifty (50) square feet gross floor area in jury assembly rooms plus one (1) per four hundred (400) square feet of gross office space.

Gross Floor Area of Proposed Courthouse = 4,810 sf.

Parking Requirements: 16 total parking spaces required, one (1) of those spaces are required to be accessible parking spaces.

B. CODES AND REGULATION OF DESIGN AND CONSTRUCTION FOR ORIGINAL BUILDING

2009 International Buildings Code (IBC)
2009 State of Alaska Amendments to IBC
NFPA 70, National electrical Code (NEC)
2009 International Fire Code (IFC)
2009 International Mechanical Code (IMC)
2009 International Fuel Gas Code Code (IFGC)
Americans with Disabilities Act
ANSI a119.1

CODES AND REGULATION OF DESIGN AND CONSTRUCTION FOR PROPOSED MODIFICATIONS

2012 International Buildings Code (IBC)
2012 International Existing Building Code (IEBC)
2014 NFPA 70, National electrical Code (NEC)
2012 International Fire Code (IFC)
2012 International Mechanical Code (IMC)
2018 Uniform Plumbing Code (UPC)
2012 International Fuel Gas Code Code (IFGC)
Americans with Disabilities Act
ANSI a119.1

SUMMARY OF APPLICABLE PROVISIONS OF IBC 2012 Edition (IBC)

ACTUAL BUILDING AREA:

Basement:	1,062 s.f.
Level One:	4,810 s.f.
Total:	5,872 s.f.

OCCUPANCY CLASSIFICATION:

IBC 303: A-3, B and S-1 The office spaces are classified as B. The courtrooms are classified as A-3 assembly. The storage areas are classified as S-1.

The occupancy of the building is not changing.

The building will be sprinklered.

CONSTRUCTION TYPE:

IBC Table 503 Type V B IBC bases construction type on building area limitation of Table 503. With the given level one area the lowest compliant level of construction is the minimum required. In reference to the area calculations that follow the building must comply with the requirements of a Type VB construction.

ALLOWABLE AREA:

IBC Table 503

Basic Allowable Area	6,000 s.f.
Allowable Building Height	1 stories; 40 feet

Our design adopts the **non-separated use** provision of the code which classifies the entire building as the most restrictive applicable classification. For this building the A-3 occupancy is the most restrictive. It has a basic allowable area of 6000 s.f. on the main level.

506.2/506.3 Frontage Area Increase

Due to the maximum setback on all four sides, the building is allowed an additional 75% increase. The simplified formula is as follows for the area on the first floor:

[6000+(6000X.75)] = 10,500 s.f. max.

IBC Section 508.3 Non-separated Use

This provision allows the building to be constructed according to the most restrictive occupancy classification that then eliminates the need for occupancy separations required by Table 508.4

FIRE RESISTANCE OF FLOORS, WALLS AND ROOF ASSEMBLIES:

IBC Tables 601 & 602 Type VB construction does not have any required fire ratings for wall, floor, roof assemblies and exterior bearing walls.

FIRE RESISTANCE OF HAZARDOUS AREAS

IBC Section 509 The mechanical room does not have any equipment over 400,000 Btu per hour input. There are not any rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower

There is not a need for separation and/or protection for incidental use areas.

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Revisions		
No.	Description	Date
2	Plan Review	7/30/21

Drawn by JEWE	Date 12/17/2021
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Sheet Contents
LIFE SAFETY PLANS GRADE/FINISH FLOOR

Sheet No.
LS101

Plot Date Time: 12/17/2021 8:42:25 AM

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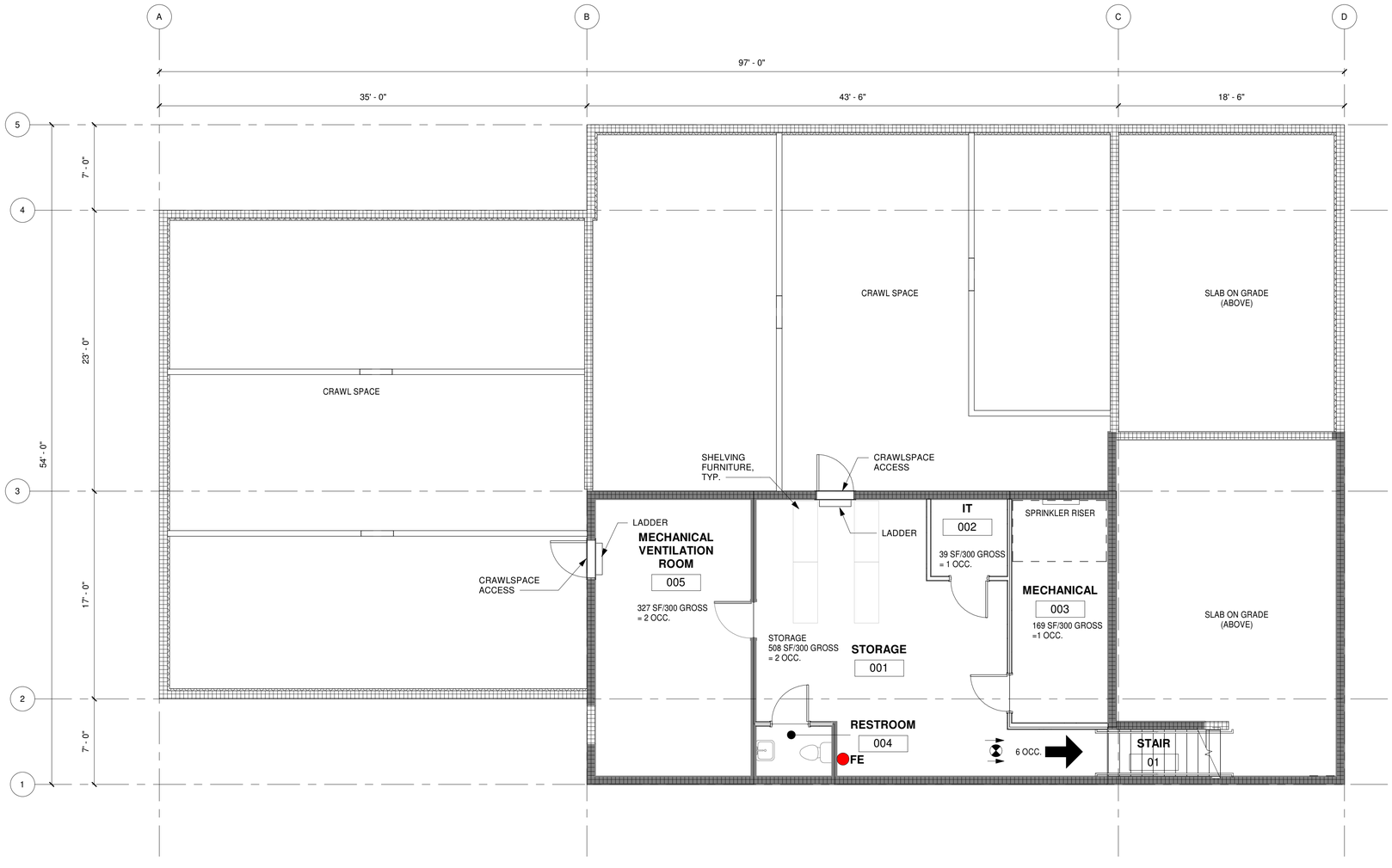

A1 / LS102 LIFE SAFETY FLOOR PLAN - BASEMENT

3/16" = 1'-0"

N

PLAN NORTH

LIFE SAFETY PLAN LEGEND

- EXIT SIGN LOCATION
- FE — FIRE EXTINGUISHER UL-RATED: 2A-10B:C
- KB — KNOX BOX LOCATION
- EXIT DISCHARGE

CODE INFORMATION

MEANS OF EGRESS

IBC Chapter 10

Section 1004 Occupant Load Calculation

Level 1
Occupant Load

Courtrooms (1950sf/40 net)	48.75
Offices (1893 sf/100 gross)	18.93
Break Room (134sf/15 net)	8.93
Waiting Area (237sf/15 gross)	15.80
Janitorial (45/300 gross)	0.15
IT (28sf/300 gross)	0.09
Total Level 1 Occupant Load	92.65 p

Basement
Occupant Load

Mechanical (169sf/300 gross)	0.56
Storage (835sf/300 gross)	2.78
Total Basement Occupant Load	3.54 p
Total Occupant Load	97 p

IBC 1005.3 Egress Widths

Egress Width Doors and Hallways = # Occupants x 0.2 inches
Egress Width Stairs = # Occupants x 0.3 inches

There are a total of 8 exits from Level 1 as follows:

South Entrance: One leaf at 36" ea. = 36" width/0.2 =	180 persons
North Entrance: One leaf at 36" ea. = 36" width/0.2 =	180 persons
Stair Entrance: One leaf at 36" ea. = 36" width/0.2 =	180 persons
Total egress capacity Level One	1080 persons
Actual Level One occupant load	93 persons

There is one exit from the Basement as follows:

Stair: 44" width / 0.3 =	147 persons
Total egress capacity from Basement	147 persons
Actual Level Two occupant load	4 persons

Corridors

Table 1018.1 Occupant loads served by corridors are not greater than 30, thus no fire-resistant rating is required in the corridors. With the automatic sprinkler system, a fire-resistance rating is not required regardless of occupant load.

IBC 1018.4 Where more than one exit or exit access doorway is required, the exit access shall be arranged such that dead-end corridors do not exceed 20 feet (6096 mm) in length.
Exception 2. In occupancies in Groups B, E, F, I-1, M, R-1, R-2, S and U, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the length of the dead-end corridors shall not exceed 50 feet (15 240 mm).

With the automatic sprinkler system, the longest dead end corridor of 30'-6" is acceptable.

IBC 1021.2.2 A basement provided with one exit shall not be located more than one story below grade plane

IBC 1009.3 Exception 1 Exit access stairway does not need to be enclosed as it is only serving two stories.

Table 1016.1 Exit travel distance limited to 250 ft in a sprinklered building.

TRAVEL DISTANCES

IBC Table 1016: Maximum Travel Distance is 250 ft.
Common Path of Travel is 100 Ft.

IBC Table 803.9:

Interior exit stairways:	Class B in a Sprinklered Building Class C in Buildings less than Three Stories
Interior exit passageways	Class B in a Sprinklered Building Class C in Buildings less than Three Stories
Rooms and Enclosed Spaces:	Class C in a Sprinklered Building

PLUMBING FIXTURES

IBC 2012

Occupant Loads

Business	93 p.
Storage	4 p.

Required Fixtures		Provided Fixtures	
Water Closets	3	Water Closets	5
Lavs	3	Lavs	5
Drinking Fountain	1	Drinking Fountain	1
Service Sink	1	Service Sink	1

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KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions

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Checked MH	Job No. 21014.01

Sheet Contents
LIFE SAFETY PLAN BASEMENT

Sheet No.
LS102

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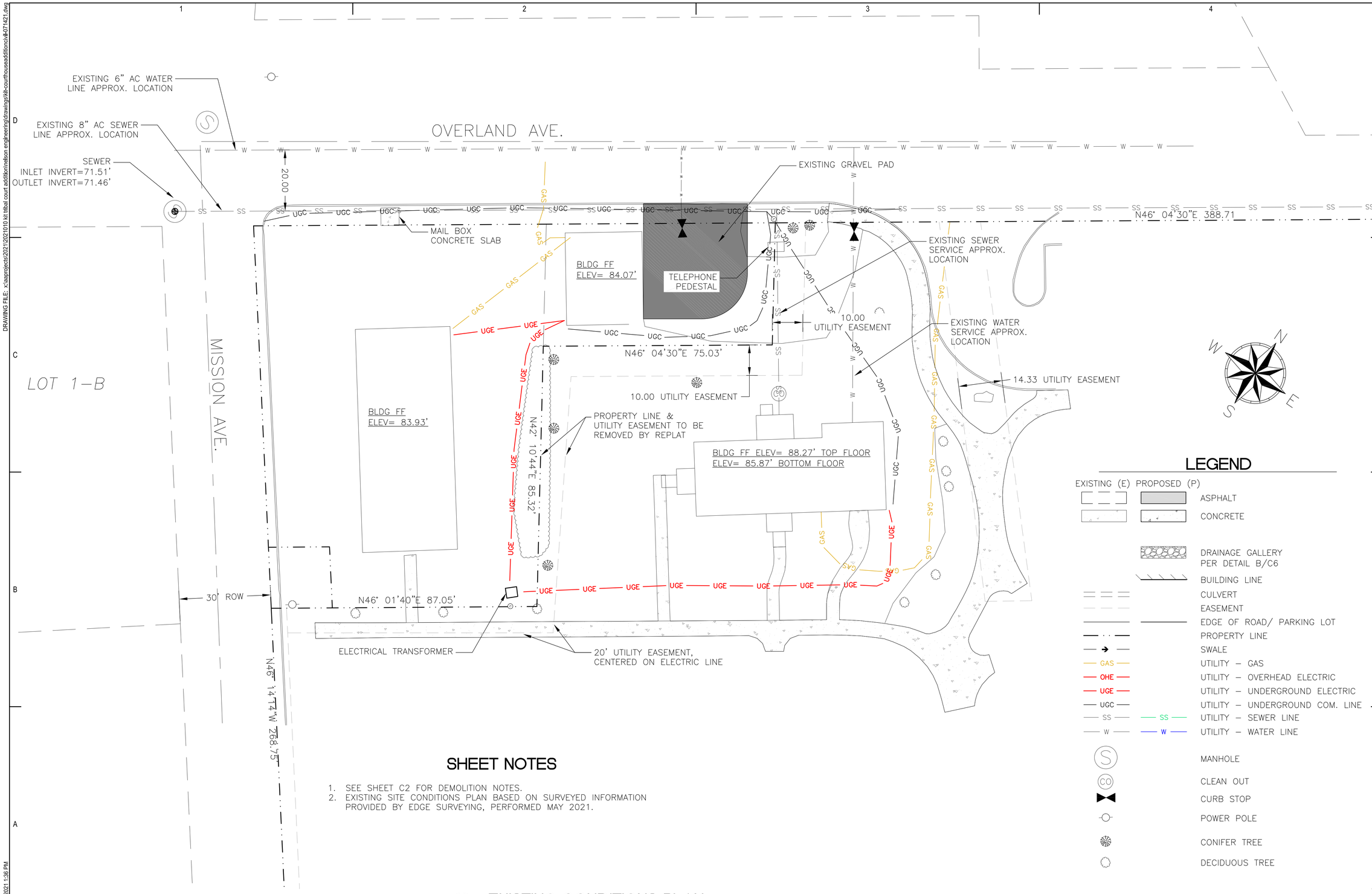

LEGEND

EXISTING (E) PROPOSED (P)

- ASPHALT
- CONCRETE
- DRAINAGE GALLERY PER DETAIL B/C6
- BUILDING LINE
- CULVERT
- EASEMENT
- EDGE OF ROAD/ PARKING LOT
- PROPERTY LINE
- SWALE
- GAS — UTILITY – GAS
- OHE — UTILITY – OVERHEAD ELECTRIC
- UGE — UTILITY – UNDERGROUND ELECTRIC
- UGC — UTILITY – UNDERGROUND COM. LINE
- SS — UTILITY – SEWER LINE
- W — UTILITY – WATER LINE
- MANHOLE
- CLEAN OUT
- CURB STOP
- POWER POLE
- CONIFER TREE
- DECIDUOUS TREE

SHEET NOTES

1. SEE SHEET C2 FOR DEMOLITION NOTES.
2. EXISTING SITE CONDITIONS PLAN BASED ON SURVEYED INFORMATION PROVIDED BY EDGE SURVEYING, PERFORMED MAY 2021.

A C1 EXISTING CONDITIONS PLAN

GRAPHIC SCALE: 1" = 15' (22X34); 1" = 30' (11X17)

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Revisions		
No.	Description	Date

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Sheet Contents
EXISTING CONDITIONS PLAN

Category	Sheet No.
C	1

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CONTRACTOR TO COORDINATE DEMO OF EXISTING WATER, SEWER, UNDERGROUND TELEPHONE, CABLE AND FIBER OPTIC REMAINING FROM TWO STORY BUILDING DEMOLITION WITH UTILITY COMPANIES

OVERLAND AVE.

DEMO EXISTING SERVICE TO MAIN

DEMO & REPLACE EXISTING SEWER AND WATER SERVICES. SEE SHEET C3

COORDINATE DEMO OF EXISTING UTILITY SERVICE LINE W/ UTILITY COMPANY

PRESERVE EXISTING MAILBOX CLUSTER

OWNER TO REMOVE EXISTING 2 STORY STRUCTURE & INFILL CRAWLSPACE

DEMO EXISTING PRIVATE GAS & ELECTRIC LINES

COORDINATE DEMO OF EXISTING UTILITY SERVICE LINE W/ UTILITY COMPANY

EXIST. RASPBERRY PATCH REMOVED/RELOCATED BY OWNER

OWNER TO REMOVE EXIST. GREENHOUSE & CONCRETE SLAB

DEMO EXIST. SIDEWALK

LOT 1-B

MISSION AVE.

NOTE #2

DEMO EXIST. CONC. PAD

DEMO EXIST. DECK & SUPPORTS

NOTE #3

DEMO EXIST. DECK & SUPPORTS

DEMO EXIST. SIDEWALK

DEMO EXIST. DECK & SUPPORTS

DEMO EXIST. SIDEWALK

DEMO EXIST. SIDEWALK

CONTRACTOR SHALL COORDINATE EXISTING UNDERGROUND COMM. LINE RELOCATION DUE TO EXISTING ROUTING UNDER NEW BUILDING ADDITION WITH ACS UTILITY COMPANY. UITILITY COMPANY SHALL RE-ROUTE & RE-USE EXISTING COMM LINE OR RE-ROUTE & REPLACE AS NECESSARY. OWNER SHALL PAY UTILITY COMPANY DIRECTLY FOR THIS WORK SCOPE. SEE SHEET C3.

LEGEND

EXISTING (E)	PROPOSED (P)	
		ASPHALT
		CONCRETE
		DRAINAGE GALLERY PER DETAIL B/C6
		BUILDING LINE
		CULVERT
		EASEMENT
		EDGE OF ROAD/ PARKING LOT
		PROPERTY LINE
		SWALE
GAS		UTILITY – GAS
OHE		UTILITY – OVERHEAD ELECTRIC
UGE		UTILITY – UNDERGROUND ELECTRIC
UGC		UTILITY – UNDERGROUND COM. LINE
SS	SS	UTILITY – SEWER LINE
W	W	UTILITY – WATER LINE
		MANHOLE
		CLEAN OUT
		CURB STOP
		POWER POLE
		CONIFER TREE
		DECIDUOUS TREE

SHEET NOTES

1. EXISTING SITE CONDITIONS PLAN BASED ON SURVEYED INFORMATION PROVIDED BY EDGE SURVEYING, PERFORMED MAY 2021.
2. DEMO AND REMOVE EXISTING CONCRETE DECK SUPPORT & STEMWALL UNDER DECK. PLAN DIMENSIONS 7.5'x6', WITH 3' CONCRETE ABOVE GRADE. DEPTH BELOW GRADE UNKNOWN. CONTRACTOR TO ASSUME CONCRETE EXTENDS 2' BELOW GRADE. ASSUMED TO BE SOLID CONCRETE. CONTRACTOR TO VERIFY PRIOR TO BIDDING.
3. DEMO & REMOVE EXISTING CORRUGATED STEEL LIGHT WELL & BACKFILL. COORDINATE WITH ARCHITECTURAL.

A/C2 DEMOLITION PLAN

GRAPHIC SCALE: 1" = 15' (22X34); 1" = 30' (11X17)

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Sheet Contents: DEMOLITION PLAN

Category	Sheet No.
C	2

PLOT DATE: 12/22/2021 12:29 PM

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TEMPORARY CONSTRUCTION FENCE BY CONTRACTOR. CONTRACTOR TO DETERMINE NUMBER AND LOCATION OF ACCESS GATES

REMOVE AND REPLACE EXISTING AC PAVEMENT AND CONCRETE SIDEWALK/CURB AS REQUIRED TO PERFORM WATER AND SEWER UTILITY WORK.

REMOVE EXISTING WATER SERVICE BACK TO MAIN & CAP CORP. STOP

REPLACE EXISTING SEWER W/ NEW 4" CAST IRON SEWER LINE. PROVIDE NEW SEWER SERVICE CONNECTION TO SEWER MAIN. CAP EXISTING SERVICE TAP. (APPROX. INV.=72.25')

BLEND NEW TYPE II CURB TO EXISTING TYPE 1 CURB

EXIST. MANHOLE INLET. INVERT=71.51' OUTLET INVERT=71.46'

OVERLAND AVE.

A C5

LANDSCAPE AREA. PROVIDE TOPSOIL & SEEDING

TYPE 2 CURB

2'W ROCK LINED SWALE, 6" DEEP. 1"–3" ROCK OVER SEPERATION FABRIC.

BIO–SWALE FOR STORMWATER INFILTRATION

TYPE 3 CURB

LOT 1–B

MISSION AVE.

PROPOSED BUILDING

EXIST. BLDG FOOTPRINT

REPLACE EXISTING WATER SERVICE W/ NEW 6"ø DIP WATER SERVICE. PROVIDE NEW TEE, VALVE & RISER PER DETAIL A/C7. CAP EXISTING SERVICE AND REMOVE EXISTING VALVE RISER

ACS UTILITY COMPANY RE–ROUTING OF UNDERGROUND COMM. LINE – SEE SHEET C2 & ELECTRICAL DRAWINGS

PROTECT EXIST. LANDSCAPING

BIO–SWALE FOR STORMWATER INFILTRATION

DEMO PORTION OF EXISTING SIDEWALK & REPLACE W/ NEW, ALIGNED W/ NEW DOOR LOCATION

TYPE 1 CURB RETURN

TYPE 4 CURB ACROSS NEW CURB CUT. MAINTAIN EXISTING FLOW LINE

BIO–SWALE FOR STORMWATER INFILTRATION

LEGEND

EXISTING (E)	PROPOSED (P)	
		ASPHALT
		CONCRETE
		DRAINAGE GALLERY PER DETAIL B/C6
		BUILDING LINE
		CULVERT
		EASEMENT
		EDGE OF ROAD/ PARKING LOT
		PROPERTY LINE
		SWALE
GAS		UTILITY – GAS
OHE		UTILITY – OVERHEAD ELECTRIC
UGE		UTILITY – UNDERGROUND ELECTRIC
UGC		UTILITY – UNDERGROUND COM. LINE
SS	SS	UTILITY – SEWER LINE
W	W	UTILITY – WATER LINE
		TEMPORARY CONSTRUCTION FENCE
		MANHOLE
		CLEAN OUT
		CURB STOP
		POWER POLE
		CONIFER TREE
		DECIDUOUS TREE

QUANTITIES

10,800	SF NEW ASPHALT PAVEMENT
1,600	SF NEW CONCRETE SIDEWALK
414	LF NEW CURB
68	LF NEW WATER SERVICE
49	LF NEW SEWER SERVICE

SHEET NOTES

1. CONTRACTOR SHALL PROTECT ALL UTILITIES TO REMAIN.

A C3 SITE PLAN

GRAPHIC SCALE: 1" = 15' (22X34); 1" = 30' (11X17)

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Sheet Contents: SITE PLAN

Category	Sheet No.
C	3

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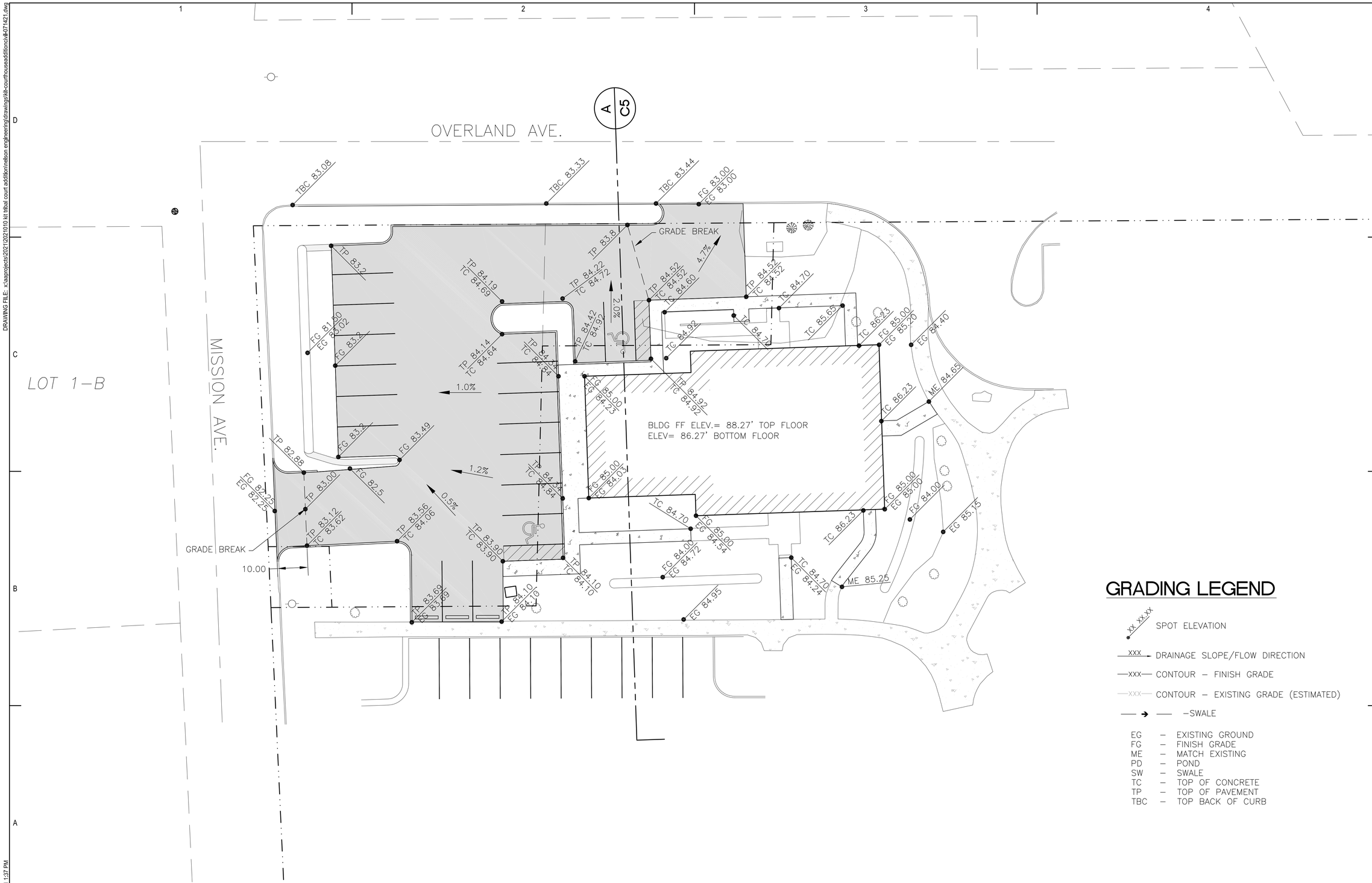

GRADING LEGEND

- XX XX.XX — SPOT ELEVATION
- XXX — DRAINAGE SLOPE/FLOW DIRECTION
- —XXX— CONTOUR – FINISH GRADE
- —XXX— CONTOUR – EXISTING GRADE (ESTIMATED)
- —→— –SWALE

EG	–	EXISTING GROUND
FG	–	FINISH GRADE
ME	–	MATCH EXISTING
PD	–	POND
SW	–	SWALE
TC	–	TOP OF CONCRETE
TP	–	TOP OF PAVEMENT
TBC	–	TOP BACK OF CURB

A / C4 GRADING PLAN

GRAPHIC SCALE: 1" = 15' (22X34); 1" = 30' (11X17)

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Revisions

No.	Description	Date

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Sheet Contents
GRADING PLAN

Category	Sheet No.
C	4

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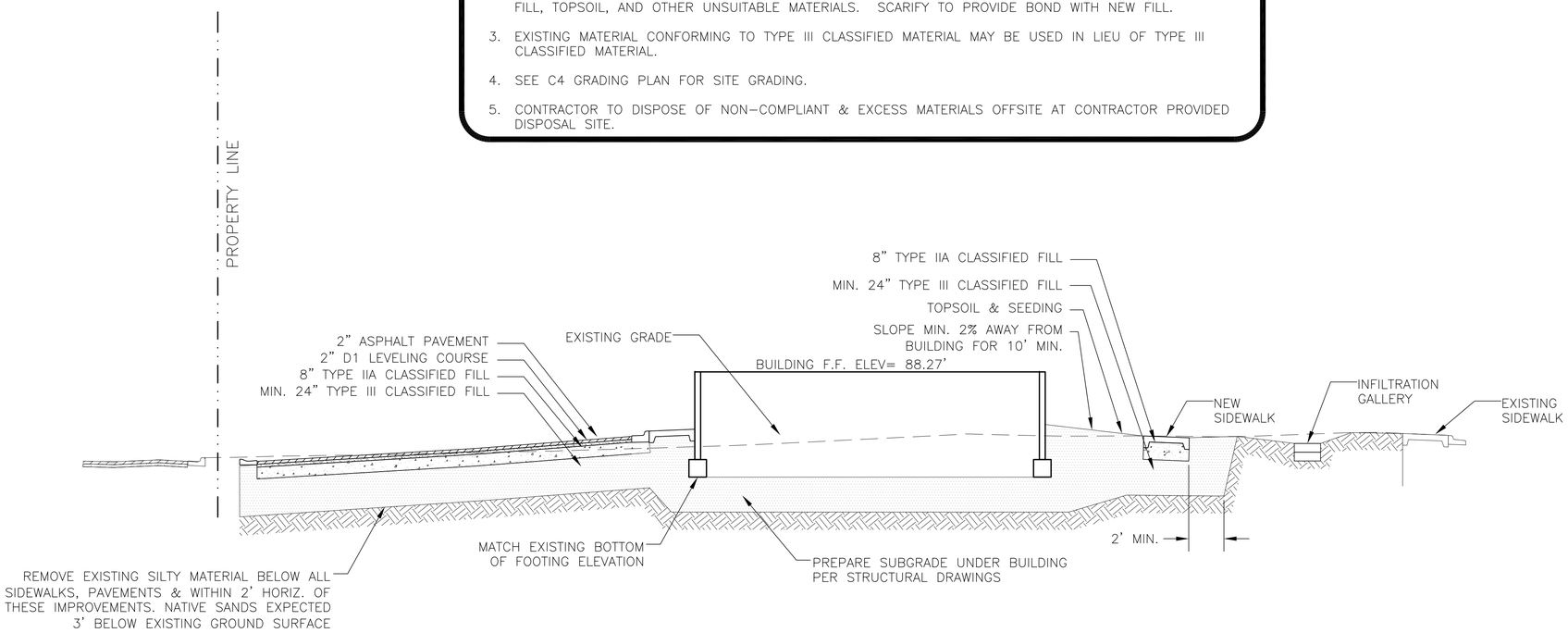
PLOT DATE: 7/15/2021 1:37 PM

SITE SECTION NOTES

1. ALL BUILDING, PARKING LOT, AND DRIVEWAY FILLS SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 12" AND COMPACTED TO 95 PERCENT (95%) OF MAXIMUM DRY DENSITY.
2. GROUND SURFACE SHALL BE PREPARED TO RECEIVE FILL BY REMOVING VEGETATION, NONCOMPLYING FILL, TOPSOIL, AND OTHER UNSUITABLE MATERIALS. SCARIFY TO PROVIDE BOND WITH NEW FILL.
3. EXISTING MATERIAL CONFORMING TO TYPE III CLASSIFIED MATERIAL MAY BE USED IN LIEU OF TYPE III CLASSIFIED MATERIAL.
4. SEE C4 GRADING PLAN FOR SITE GRADING.
5. CONTRACTOR TO DISPOSE OF NON-COMPLIANT & EXCESS MATERIALS OFFSITE AT CONTRACTOR PROVIDED DISPOSAL SITE.



A / C5 SITE SECTION

GRAPHIC SCALE: NTS

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07/15/21
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TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

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SITE SECTION

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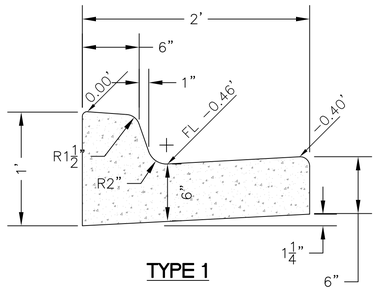

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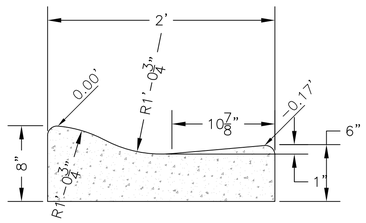

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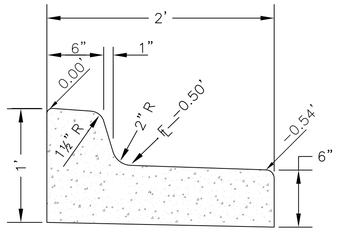

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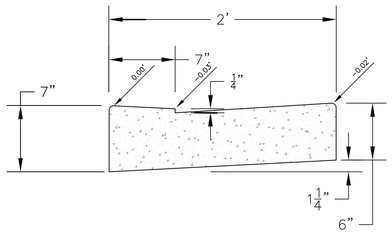
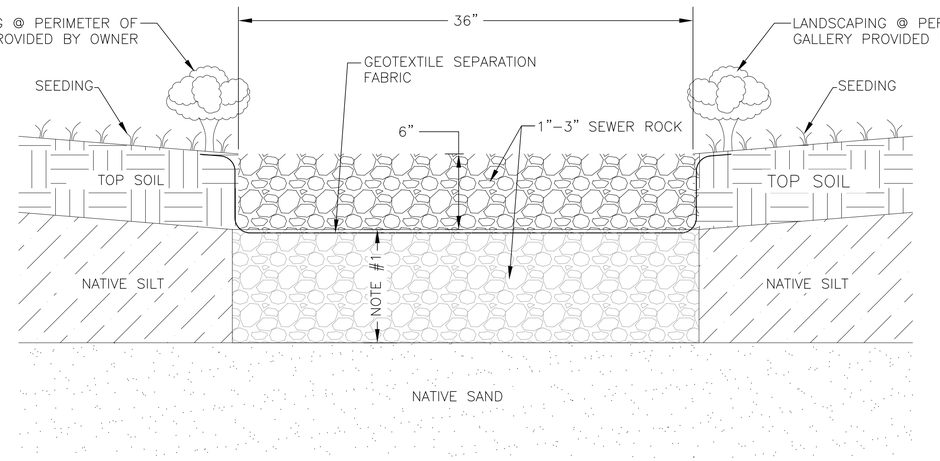


TYPE 4 CURB CUT

A C6 TYPICAL CURBS

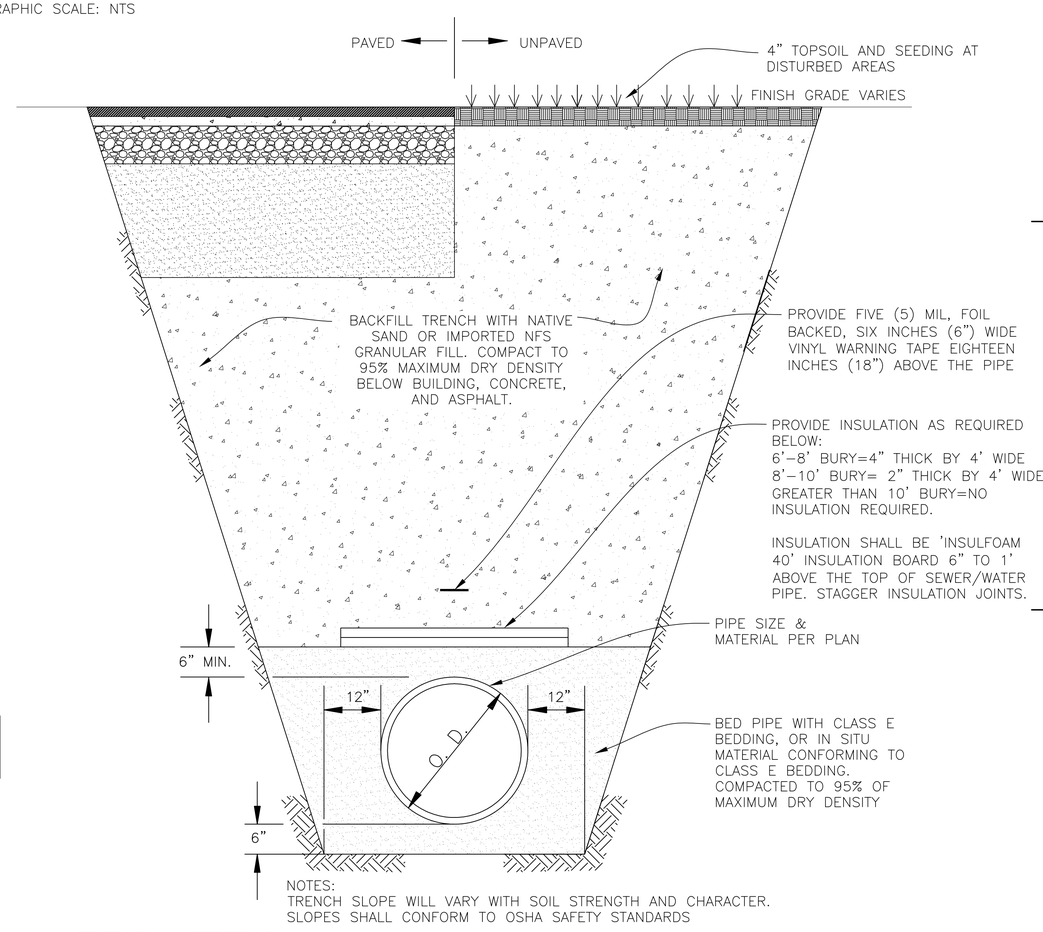
GRAPHIC SCALE: NTS

NOTES:
1. EXISTING NATIVE SILT EXTENDS TO APPROX. 3' BELOW EXISTING GRADE PER TEST HOLES.



B C6 INFILTRATION GALLERY DETAIL

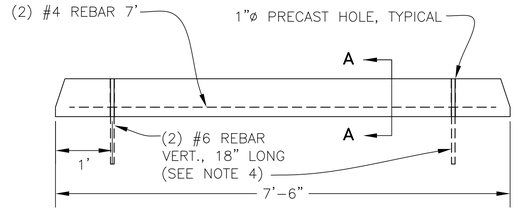
GRAPHIC SCALE: NTS



NOTES:
TRENCH SLOPE WILL VARY WITH SOIL STRENGTH AND CHARACTER. SLOPES SHALL CONFORM TO OSHA SAFETY STANDARDS

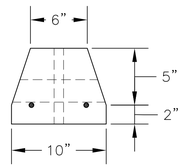
E C6 TYPICAL TRENCH

GRAPHIC SCALE: NTS



ELEVATION

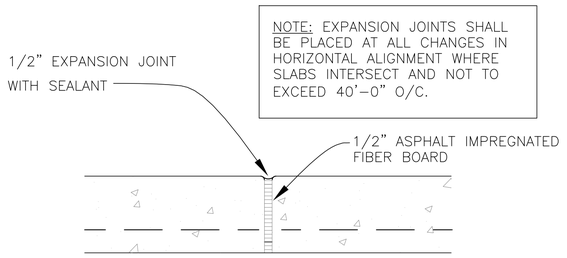
NOTES:
1. CONCRETE WHEEL STOPS SHALL BE PLACED PER PLANS OR AS DIRECTED BY THE ENGINEER.
2. CONCRETE WHEEL STOP SHALL BE PRECAST CLASS A-3 CONCRETE.
3. EPOXY CEMENT SHALL NOT BE SUBSTITUTED FOR #6 VERTICAL REBAR PIN.
4. HOLES FOR REBAR DOWELS SHALL BE 1-INCH DIAMETER. GROUT, CEMENT, OR EPOXY HOLE SHUT AFTER BAR IS IN PLACE.



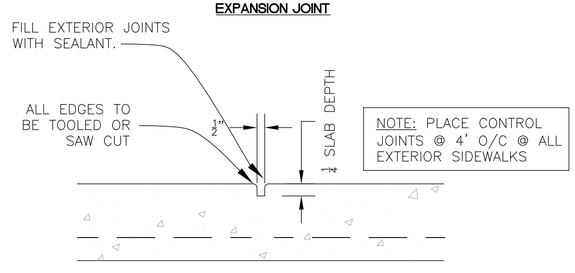
SECTION A-A

C C6 WHEEL STOP

GRAPHIC SCALE: NTS



EXPANSION JOINT



CONTROL JOINT

D C6 TYP. EXPANSION/CONTROL JOINT

GRAPHIC SCALE: NTS

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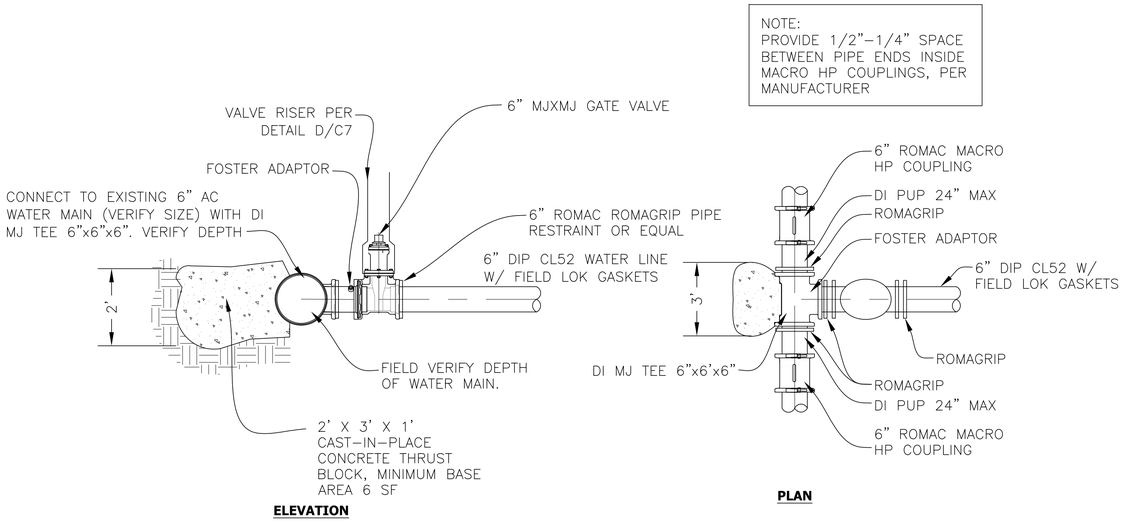
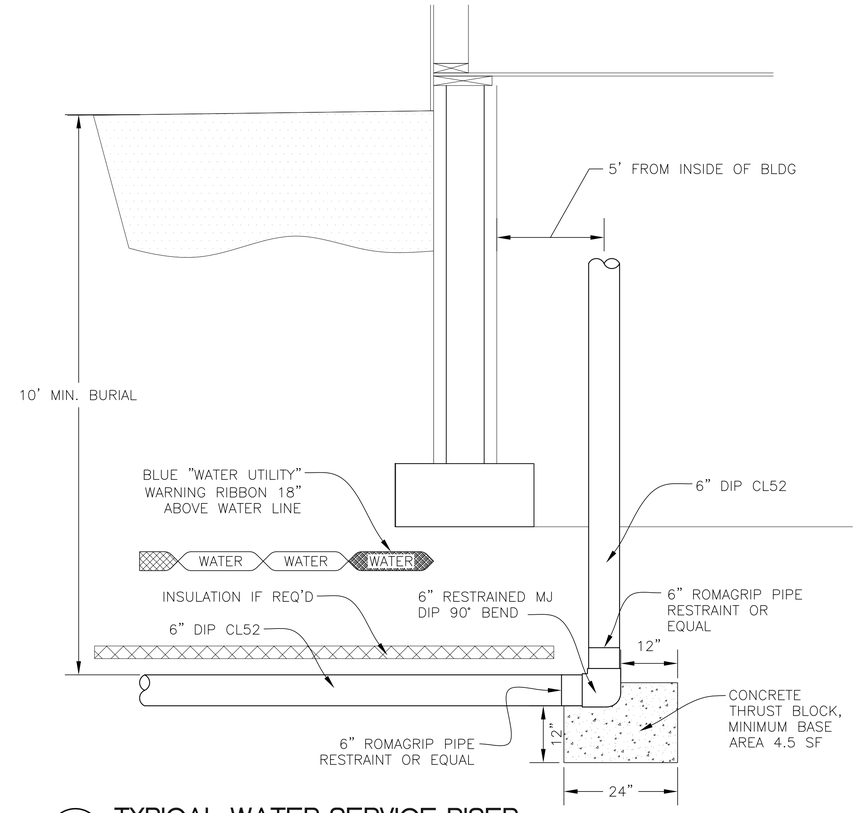
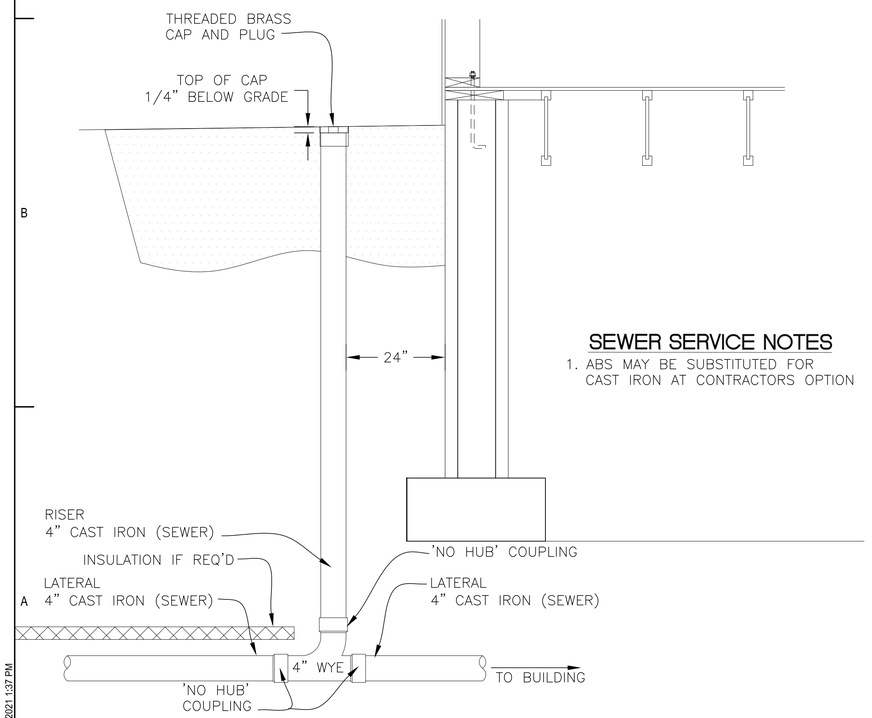


A C7 EXISTING WATER SERVICE CONNECTION
SCALE: NTS

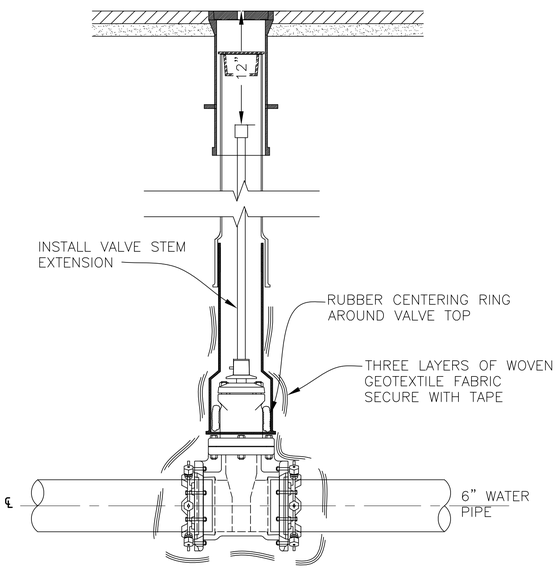


B C7 TYPICAL WATER SERVICE RISER
SCALE: NTS

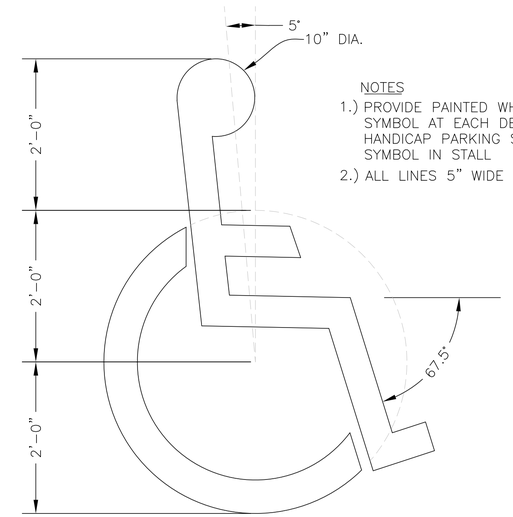


SEWER SERVICE NOTES
1. ABS MAY BE SUBSTITUTED FOR CAST IRON AT CONTRACTORS OPTION

C C7 TYPICAL SANITARY SEWER SERVICE CONNECTION
SCALE: NTS



D C7 TYPICAL VALVE BOX
SCALE: NTS



NOTES
1.) PROVIDE PAINTED WHEELCHAIR SYMBOL AT EACH DESIGNATED HANDICAP PARKING STALL CENTER SYMBOL IN STALL
2.) ALL LINES 5" WIDE

E C7 ADA PARKING STALL
SCALE: NTS

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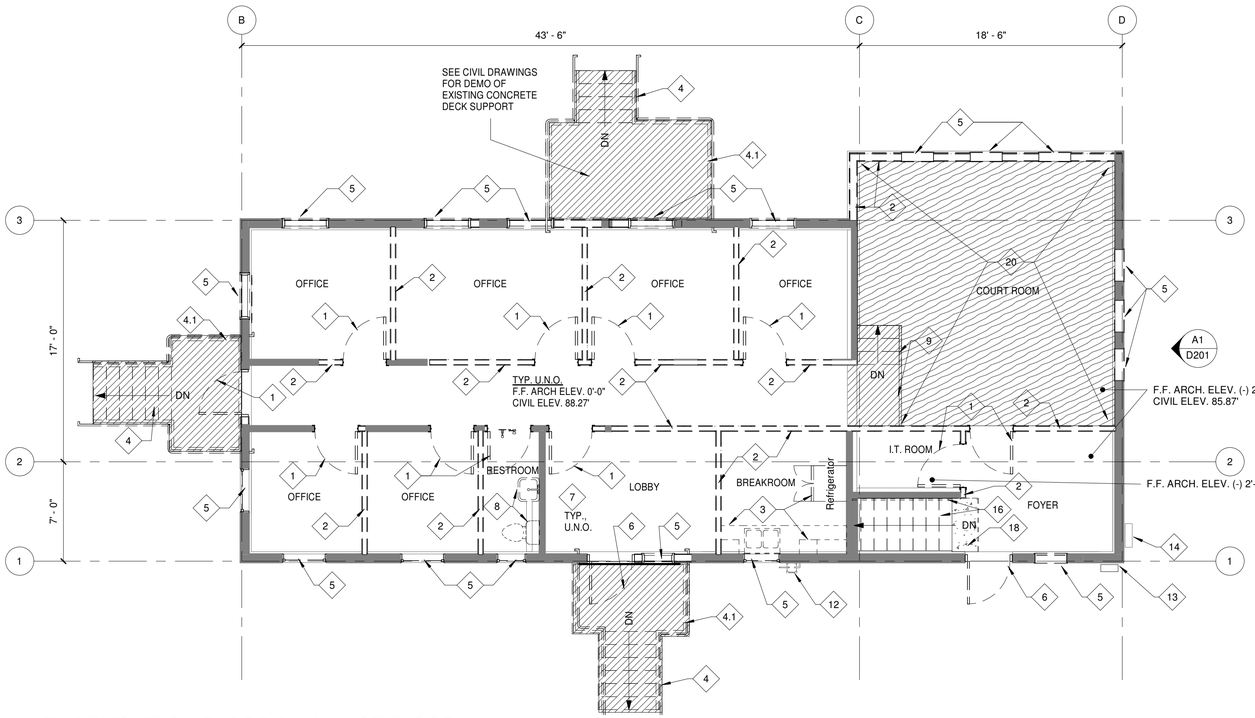
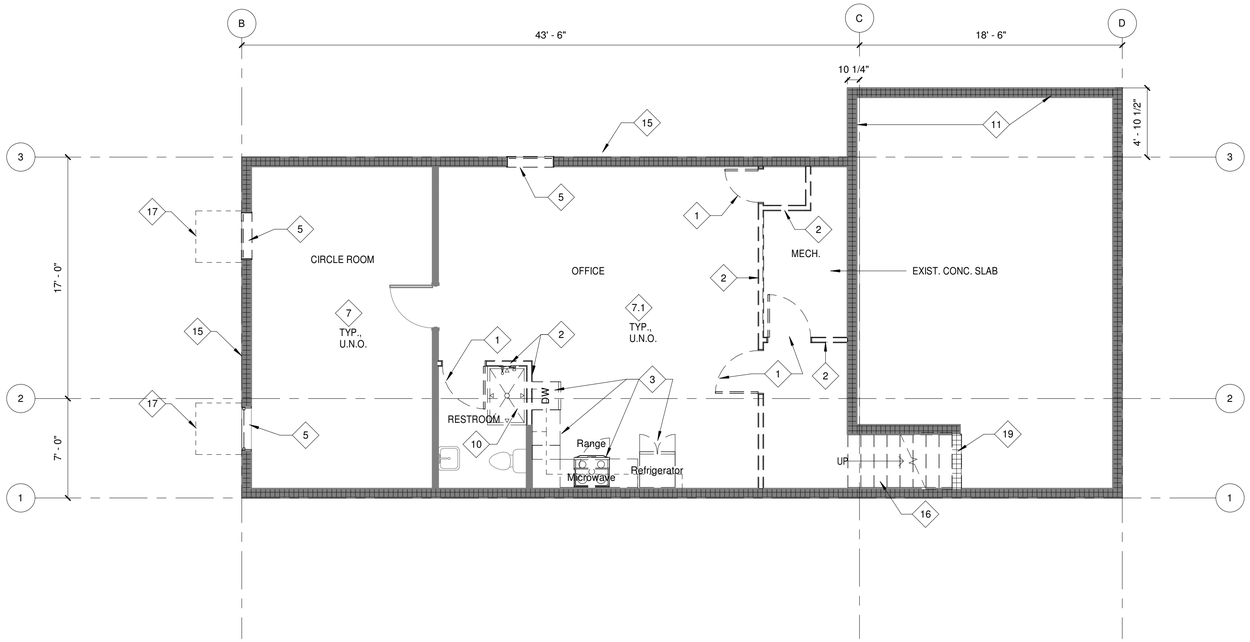


C1 / D101 DEMOLITION FLOOR PLAN - 1ST FLOOR

3/16" = 1'-0"

N

PLAN NORTH



A1 / D101 BASEMENT DEMOLITION FLOOR PLAN - BASEMENT

3/16" = 1'-0"

N

PLAN NORTH

LEGEND

- EXISTING WOOD FRAMED WALL TO REMAIN
- EXISTING CMU WALL TO REMAIN
- DEMO EXIST. CONSTRUCTION ELEMENT
- DEMO EXIST. FLOOR ASSEMBLY TO SLAB ON GRADE
- DEMO EXIST. CONCRETE SLAB ON GRADE
- DEMO EXIST. WOOD FRAMED STAIR AND LANDING

DEMO PLAN SHEET NOTES

1. REMOVE & SALVAGE EXISTING INTERIOR DOOR & FRAME, TURN OVER TO OWNER,
2. DEMO EXISTING WALL
3. REMOVE EXISTING COUNTERS, BASE & UPPER CABINETS, APPLIANCES AND FIXTURES - TO BE SALVAGE FOR REUSE COORDINATE WITH OWNER FOR REMOVAL.
4. DEMO EXISTING WOOD FRAMED STAIR, RAILINGS
4.1. DEMO/ REMOVE EXIST. WD. FRAMED DECK, SUPPORT POSTS & FOOTINGS
5. REMOVE & SALVAGE EXISTING WINDOW, TURN OVER TO OWNER
6. REMOVE AND SALVAGE EXISTING EXTERIOR DOOR & FRAME, TURN OVER TO OWNER
7. DEMO/ REMOVE EXIST. CARPET FIN. FLOORING
7.1. DEMO/ REMOVE EXIST. SHEET VINYL FLOORING
8. REMOVE EXISTING PLUMBING FIXTURES
9. DEMO EXISTING WOOD FRAMED STAIRS AND LANDING
10. DEMO EXISTING SHOWER AND TUB
11. DEMO EXISTING CMU FOUNDATION WALL AS REQUIRED FOR NEW WORK
12. EXISTING NATURAL GAS UTILITY SERVICE
13. REMOVE EXISTING TELECOM NETWORK INTERFACE PANEL - TO BE RELOCATED COORDINATE WITH ELECTRICAL
14. EXISTING ELECTRICAL POWER SERVICE PANEL, COORDINATE WITH ELECTRICAL
15. REMOVE INSULATION AT EXISTING FOUNDATION WALL
16. DEMO EXITING RAILING AND WOOD FRAMED STAIRS
17. DEMO/ REMOVE EXIST. CORRUGATED STL. LIGHTWELL, DAMP-PROOF EXIST. CMU @ BELOW GRADE CONDITION, BACKFILL UP TO NEW CIVIL GRADES
18. DEMO EXISTING CONC. SLAB ONLY AS NECESSARY TO CONSTRUCT NEW STAIRS
19. REMOVE EXISTING CMU ONLY AS NECESSARY TO CONSTRUCT NEW STAIRS
20. REMOVE EXIST. SLEEPER SUPPORTED WOOD FLOOR ASSEMBLY (EXIST. WOOD FLOOR SET OVER EXIST. RECESSED CONC. SLAB) - EXIST. SLAB TO REMAIN

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D101

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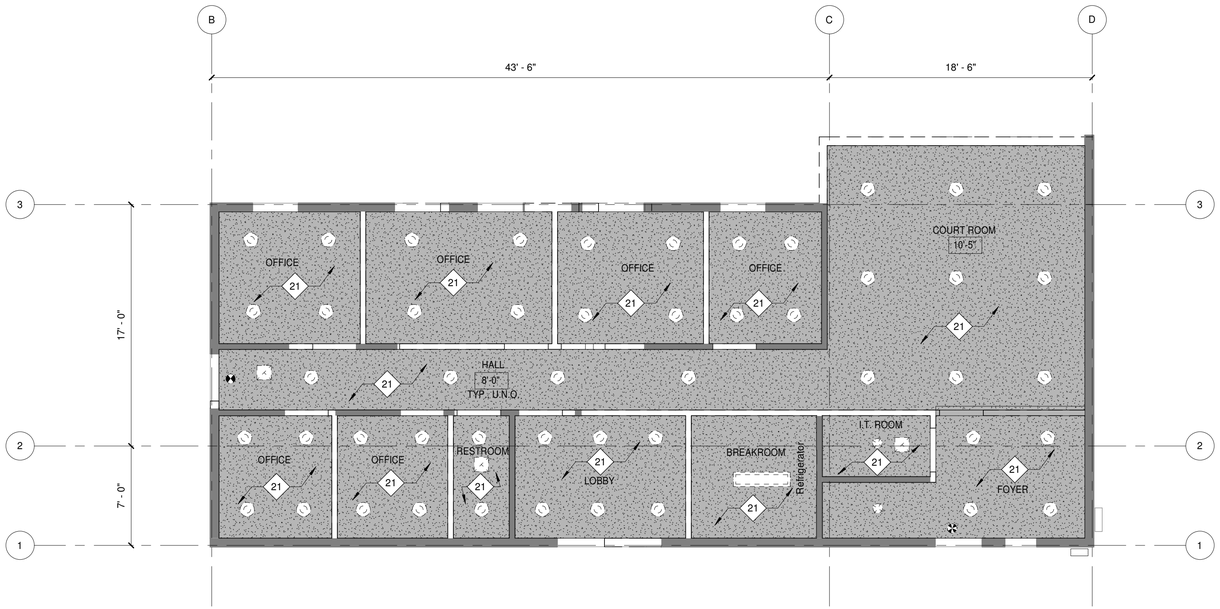
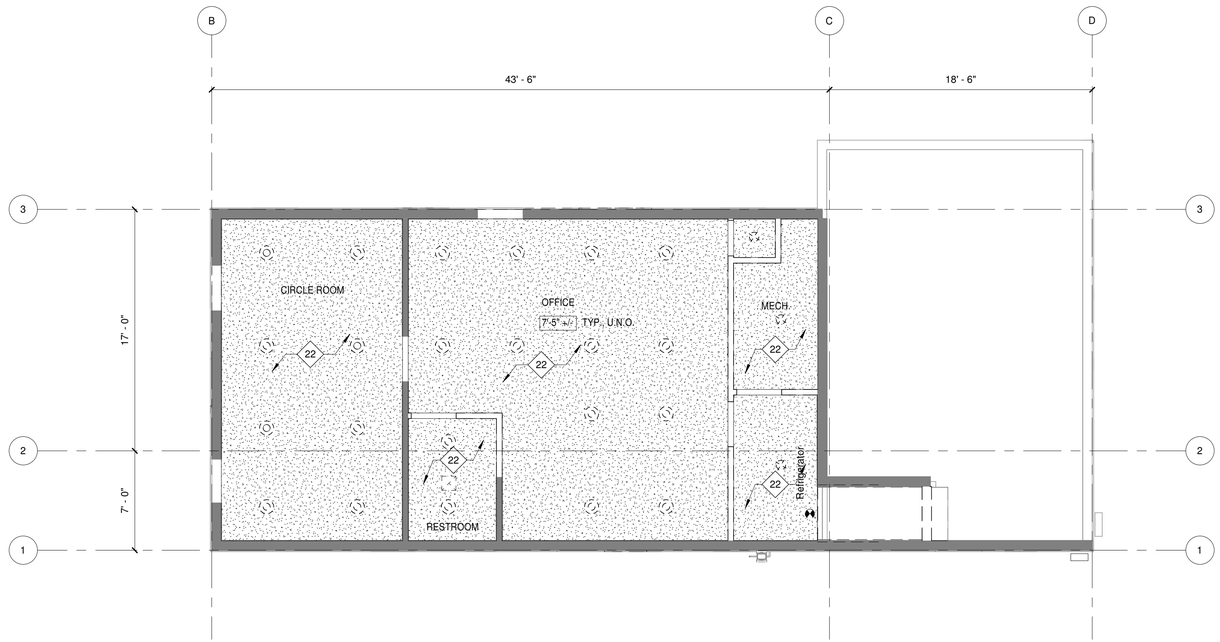


C1 / D102 DEMOLITION REFLECTED CEILING PLAN - 1ST FLOOR

3/16" = 1'-0"

N

PLAN NORTH



A1 / D102 DEMOLITION REFLECTED CEILING PLAN - BASEMENT

3/16" = 1'-0"

N

PLAN NORTH

SHEET NOTES

21 DEMO EXISTING GWB CEILING

22 DEMO EXISTING GWB CEILING AS REQUIRED FOR NEW WORK, COORDINATE WITH MECHANICAL & ELECTRICAL DRAWINGS

LEGEND

- DEMO LIGHT FIXTURE SURFACE MOUNTED
- DEMO LIGHT FIXTURE RECESSED MOUNTED
- DEMO EXIT LIGHT CEILING MOUNTED
- DEMO EXHAUST AIR GRILLE
- DEMO 1' X 4' FLUORESCENT SURFACE MOUNTED
- EXISTING GWB CEILING
- DEMO GWB CEILING

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DEMOLITION REFLECTED CEILING PLANS

Sheet No.

D102

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Plot Date Time: 12/17/2021 8:42:19 AM

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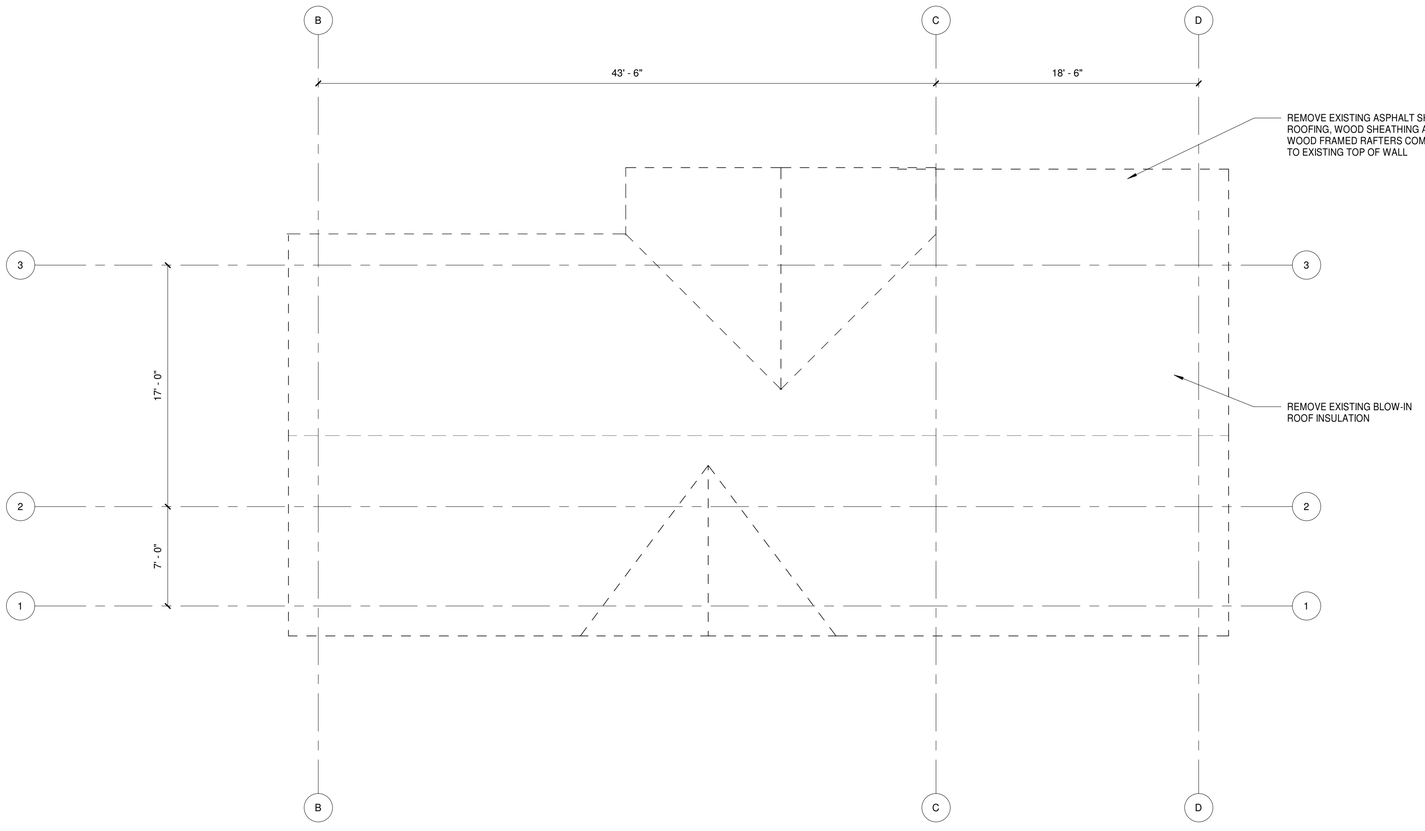
D4 / D103 EXISTING ROOF CONSTRUCTION EXHIBIT PHOTO
1" = 1'-0"



A1 / D103 DEMOLITION PLAN - ROOF
3/16" = 1'-0"

N
PLAN NORTH

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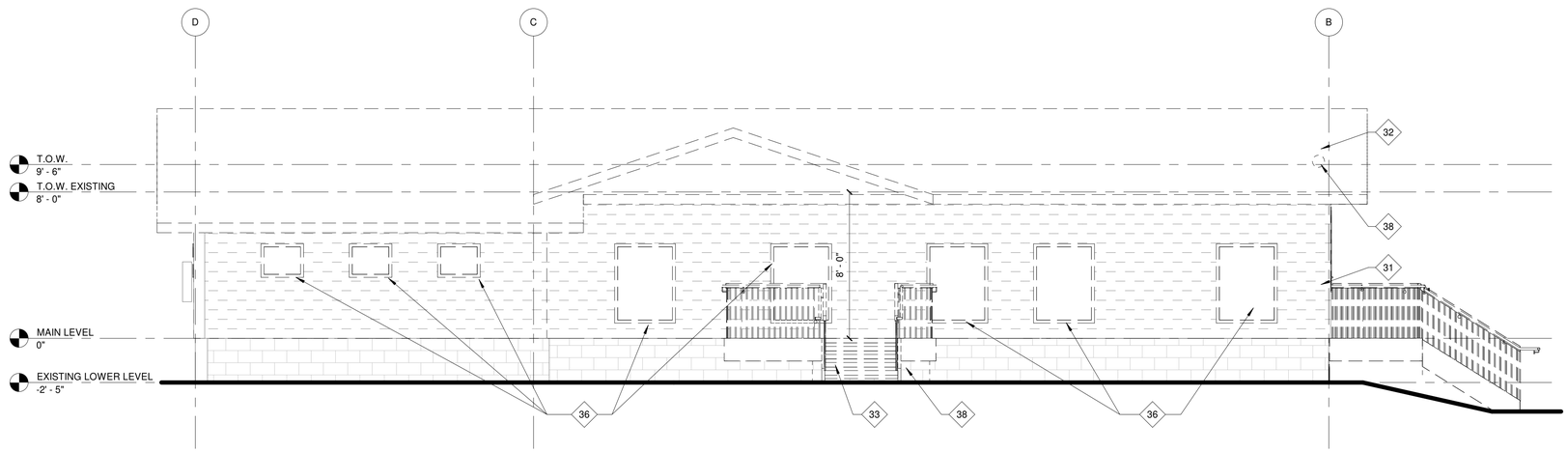
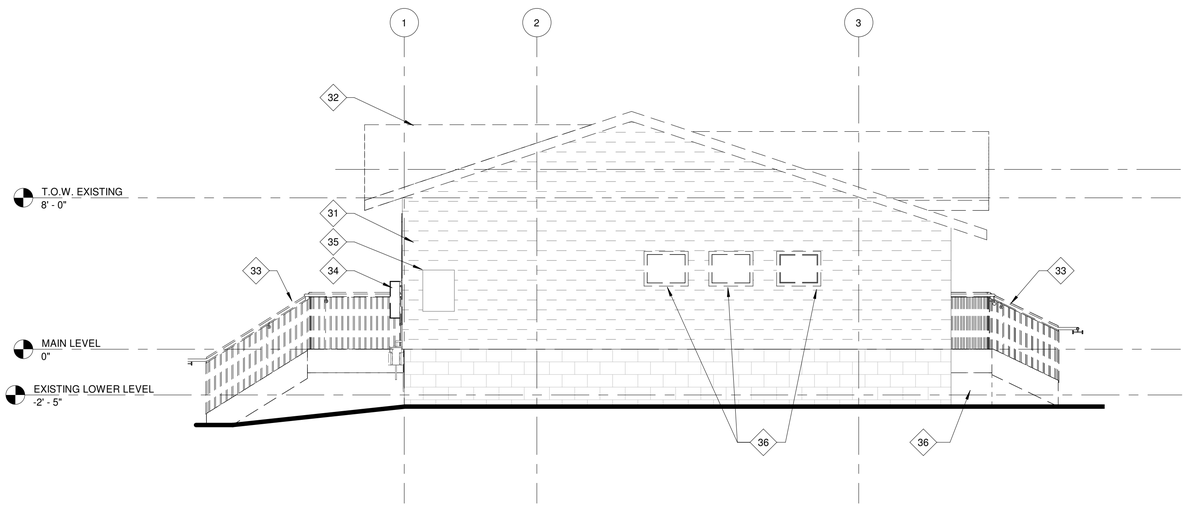


C1 D201 DEMOLITION NORTH ELEVATION
1/4" = 1'-0"



A1 D201 DEMOLITION EAST ELEVATION
1/4" = 1'-0"

DEMO ELEVATION SHEET NOTES

31	REMOVE EXISTING EXTERIOR METAL SIDING COMPLETELY
32	REMOVE EXISTING ASPHALT SHINGLE ROOFING, WOOD SHEATHING, WOOD RAFTERS COMPLETELY DOWN TO TOP OF EXISTING WALL FRAMING
33	REMOVE EXISTING WOOD FRAMED STAIRS, DECK, RAILINGS, SUPPORTING POSTS AND FOUNDATIONS COMPLETELY
34	EXISTING TELECOM PANEL TO BE RELOCATED, COORDINATE WITH ELEC. DWGS.
35	EXISTING ELECTRICAL PANEL TO REMAIN COORDINATE WITH ELEC. DWGS.
36	REMOVE AND SALVAGE EXISTING WINDOW, TURN OVER TO OWNER
37	REMOVE AND SALVAGE EXISTING DOOR AND FRAME
38	REMOVE EXISTING CONCRETE BELOW DECK, SEE CIVIL DRAWINGS
39	EXISITNG 8" DIA COM DISH TO BE REMOVED & SALVAGED FOR RE-USE

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DEMOLITION EXTERIOR ELEVATIONS

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D201

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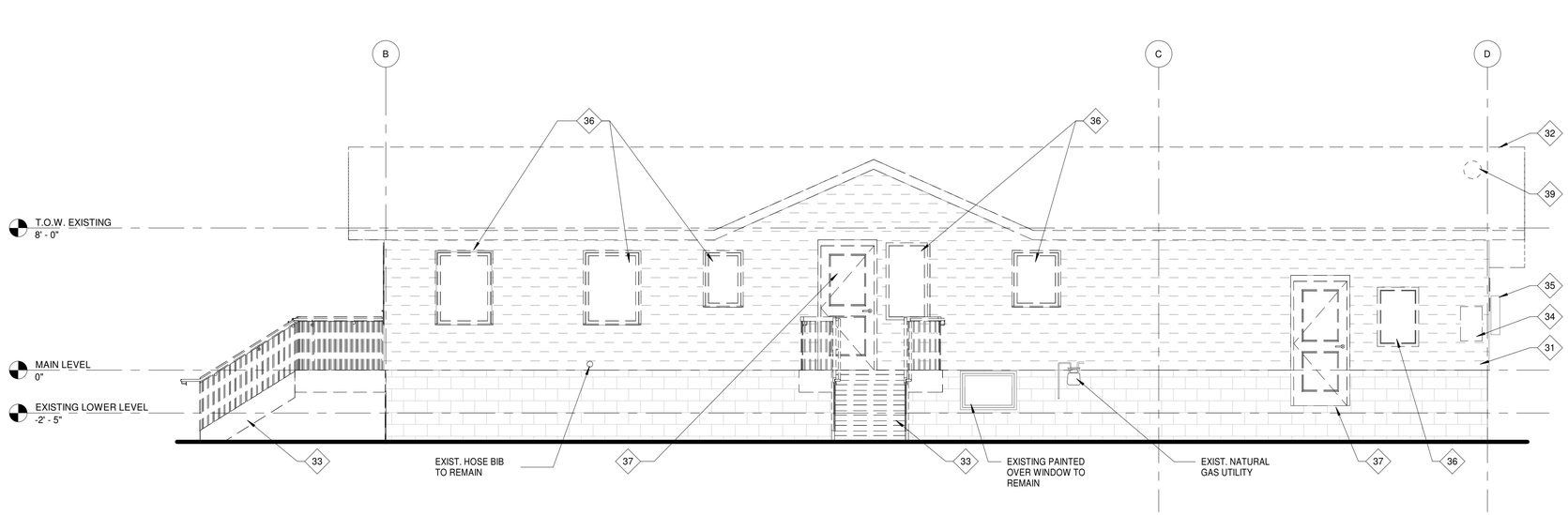
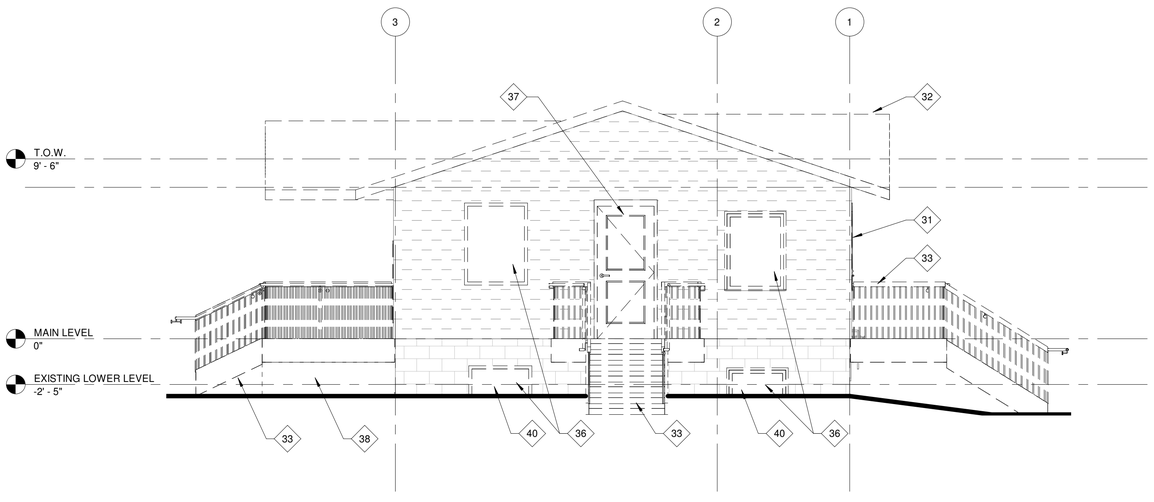


C1 / D202 DEMOLITION SOUTH ELEVATION
1/4" = 1'-0"



A1 / D202 DEMOLITION WEST ELEVATION
1/4" = 1'-0"

DEMO ELEVATION SHEET NOTES

31	REMOVE EXISTING EXTERIOR METAL SIDING COMPLETELY
32	REMOVE EXISTING ASPHALT SHINGLE ROOFING, WOOD SHEATHING, WOOD RAFTERS COMPLETELY DOWN TO TOP OF EXISTING WALL FRAMING
33	REMOVE EXISTING WOOD FRAMED STAIRS, DECK, RAILINGS, SUPPORTING POSTS AND FOUNDATIONS COMPLETELY
34	EXISTING TELECOM PANEL TO BE RELOCATED, COORDINATE WITH ELEC. DWGS.
35	EXISTING ELECTRICAL PANEL TO REMAIN COORDINATE WITH ELEC. DWGS.
36	REMOVE AND SALVAGE EXISTING WINDOW, TURN OVER TO OWNER
37	REMOVE AND SALVAGE EXISTING DOOR AND FRAME
38	REMOVE EXISTING CONCRETE BELOW DECK, SEE CIVIL DRAWINGS
39	EXISITNG 8" DIA COM DISH TO BE REMOVED & SALVAGED FOR RE-USE
40	DEMO/ REMOVE EXIST. CORRUGATED STL. LIGHTWELL, DAMP-PROOF EXIST. CMU @ BELOW GRADE CONDITION, BACKFILL UP TO NEW CIVIL GRADES

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KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by JEWE	Date 12/17/2021
Checked MH	Job No. 21014.01

Sheet Contents
DEMOLITION EXTERIOR ELEVATIONS

Sheet No.
D202

Plot Date Time: 12/17/2021 8:42:20 AM

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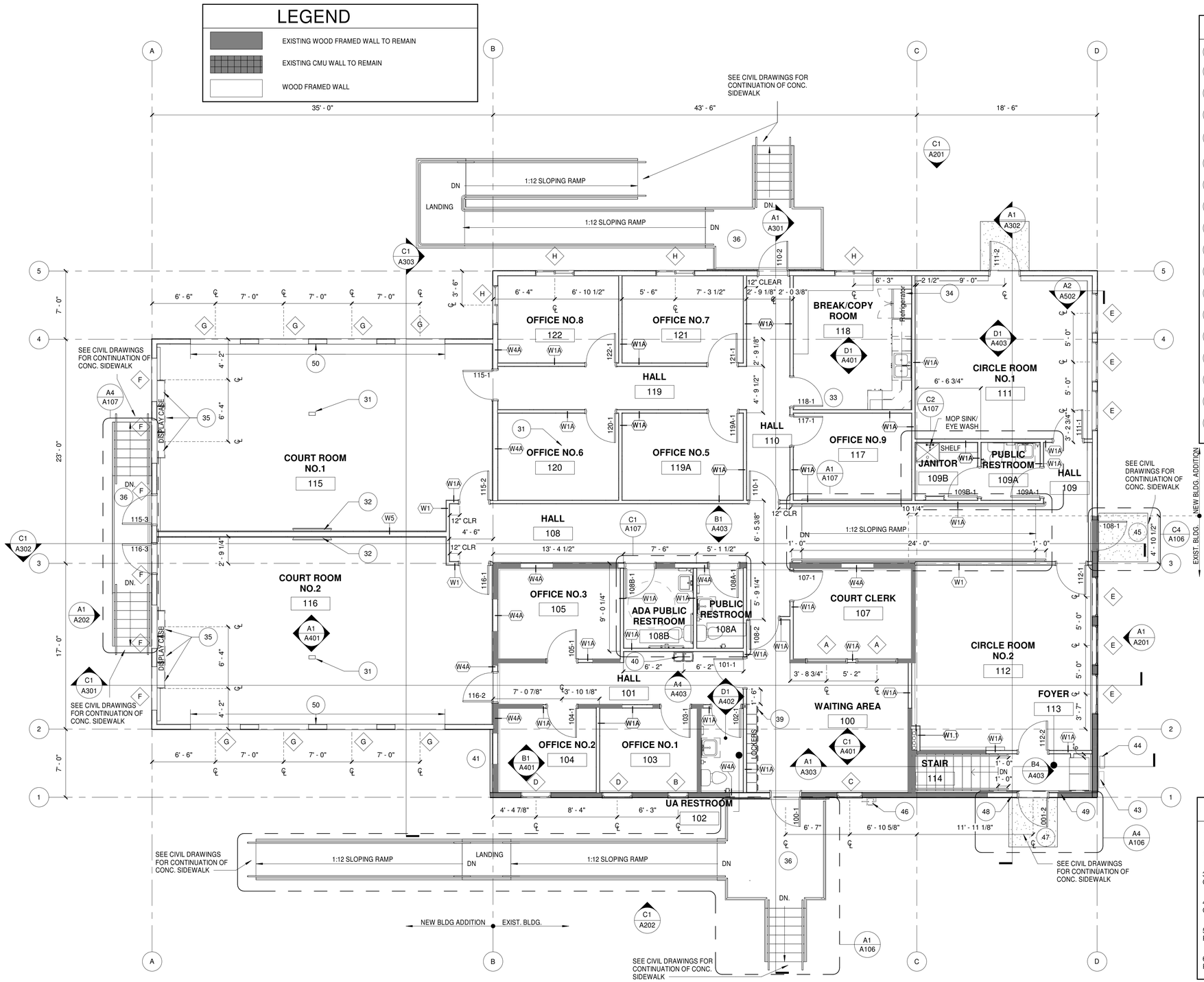

SHEET NOTES

31	INFLOOR POWER & DATA, SEE ELECTRICAL
32	55" WALL MOUNTED DISPLAY MONITOR, OFOI
33	O.F.O.I COPIER/SCANNER EQUIPMENT, SEE ELECTRICAL
34	O.F.O.I REFRIGERATOR, SEE MECHANICAL AND ELECTRICAL
35	SLIDING GLASS DOOR DISPLAY CASES (4'H X 8' W X 10"D - CENTERED BETWEEN DOOR AND CORNER) WITH INTEGRAL LIGHTING, SEE ELECTRICAL, OFOI
36	FIBERGLASS GRATED STAIR TREADS, RAMP SURFACE & LANDING
38	EXISTING CONCRETE DOOR LANDING AND SIDEWALK
39	PUBLIC USE LOCKERS
40	WATER FOUNTAIN, SEE MECHANICAL
41	DAMPPROOF EXIST. CMU BLW. GRADE & BACKFILL WHERE LIGHTWELL REMOVED
43	EXISTING ELECTRICAL SERVICE POWER PANEL
44	RELOCATED TELECOM NETWORK SERVICE PANEL
45	BRUSHED CONCRETE DOOR LANDING
46	EXISTING NATURAL GAS SERVICE
47	NEW CONCRETE LANDING
48	INFILL EXISTING DOOR OPENING
49	INFILL EXISTING WINDOW OPENING
50	FLUSH OUT INTERIOR FACE OF WALL BEYOND EXTENTS OF SHEAR WALLS (SHEATHED INTERIOR & EXTERIOR FACES - SEE STRUCTURAL DWGS.) FOR UNIFORM INTERIOR WALL SURFACE

PLAN NOTES

1. EXISTING EXTERIOR WALLS ARE 2X6 WOOD FRAMED, TYP
2. EXISTING INTERIOR WALLS ARE 2X4 WOOD FRAMED, TYP
3. PROVIDE CORNER GUARDS AT ALL OUTSIDE CORNERS, IN HALLS, WAITING AREA, COURTROOMS
4. INSTALL ACOUSTICAL BATT INSULATION IN ALL EXISTING INTERIOR WALLS UP TO CEILINGS- FILL DEPTH OF EXISTING WALL CAVITY, TYP.
5. INSTALL R-21 THERMAL BATT INSULATION IN ALL EXISTING 2X6 EXTERIOR WALLS TO REMAIN, TYP.
6. INSTALL 8" MIN. DEPTH OF ACOUSTICAL BATT INSULATION AROUND INTERIOR WALL PERIMETER OF CIRCLE ROOMS, EXTENDING MIN. 4' INWARDS

A1 / A101 FLOOR PLAN - FIRST FLOOR
3/16" = 1'-0"

PLAN NORTH

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Revisions		
No.	Description	Date

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Sheet Contents: FLOOR PLAN -FIRST FLOOR

Sheet No.
A101

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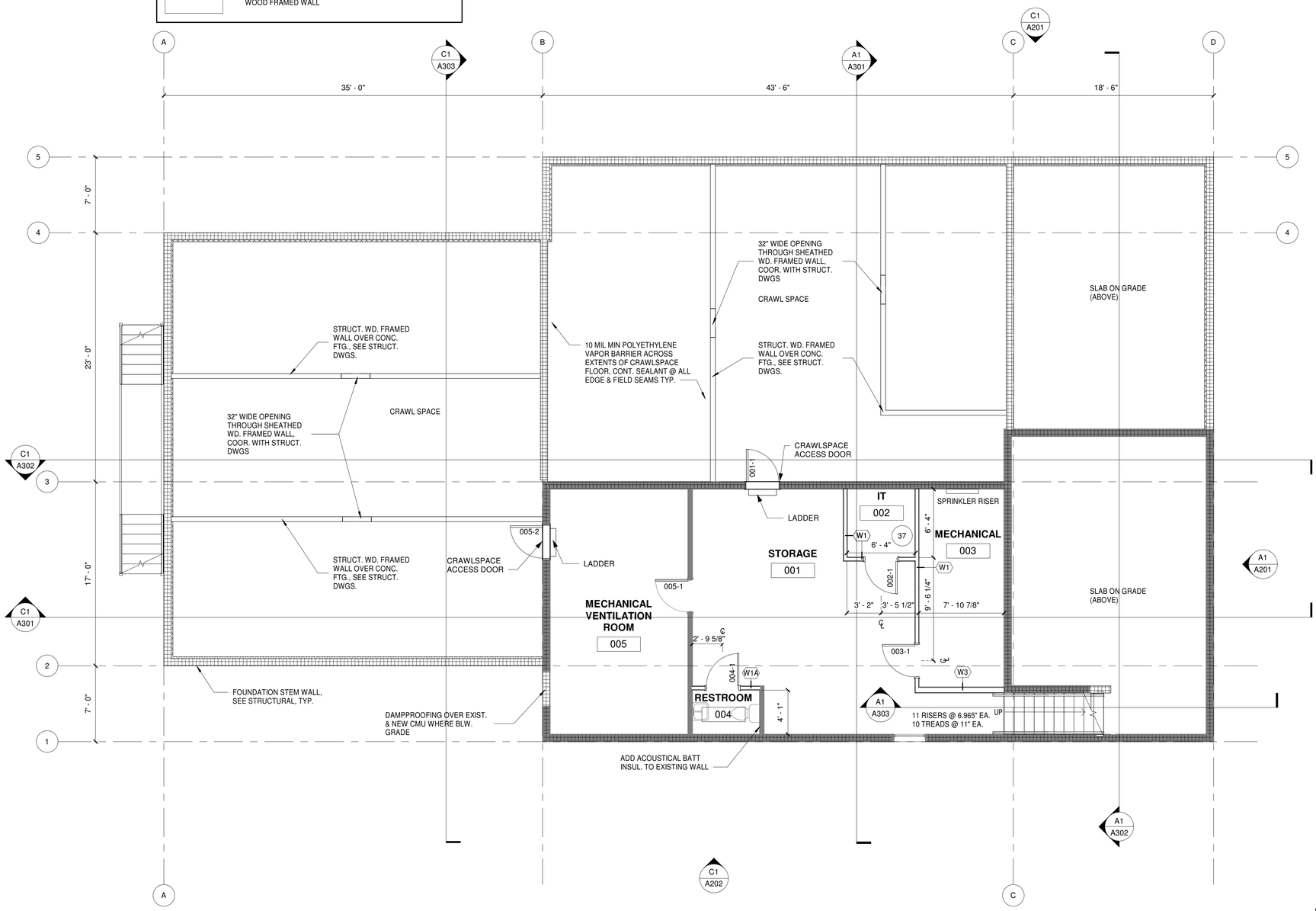
LEGEND

- EXISTING WOOD FRAMED WALL TO REMAIN
- EXISTING CMU WALL TO REMAIN
- CMU WALL- SEE STRUCTURAL DWGS
- WOOD FRAMED WALL

SHEET NOTES

37 EXIST. NETWORK RACK RELOCATED / INSTALLED, SEE ELECTRICAL

50 CMU INFILL OF EXIST. CMU WALL, SEE STRUCTURAL DWGS



A1 A102 FLOOR PLAN - BASEMENT

3/16" = 1'-0"

N

PLAN NORTH

PLAN NOTES

1. EXISTING EXTERIOR WALLS ARE 2X6 WOOD FRAMED, TYP
2. EXISTING INTERIOR WALLS ARE 2X4 WOOD FRAMED, TYP
3. EXISTING CMU WALLS ARE 8" NOMINAL CMU, TYP

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No.	Description	Date

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Sheet Contents
FLOOR PLAN -BASEMENT

Sheet No.
A102

Plot Date Time: 12/17/2021 8:42:11 AM

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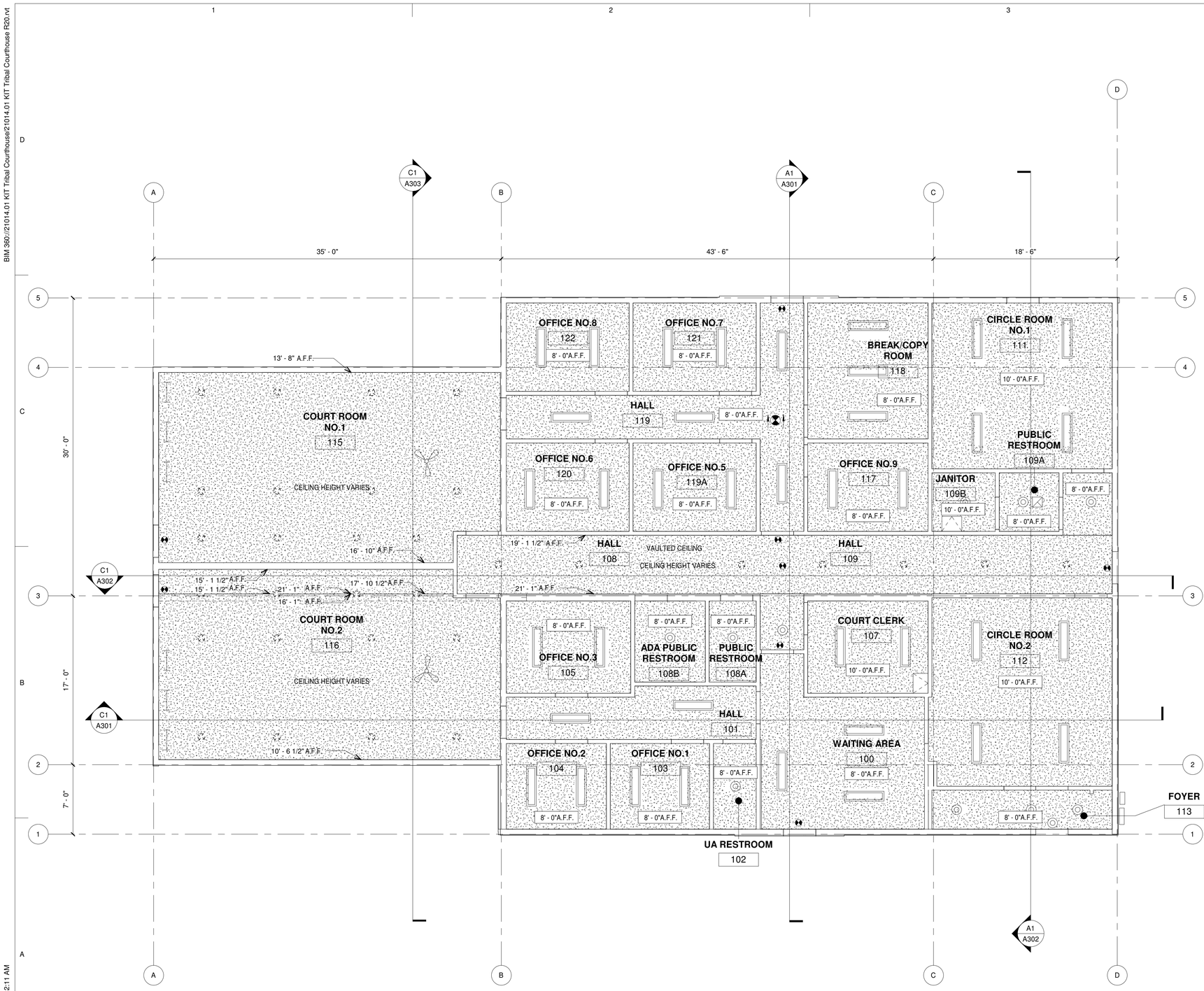

LEGEND

- GWB CEILING
- FAN
- LIGHT FIXTURE SURFACE MOUNTED
- LIGHT FIXTURE RECESSED MOUNTED
- EXIT LIGHT WALL OR CEILING MOUNT, SEE ELECTRICAL DRAWINGS
- EXHAUST AIR GRILLE
- 1' X 2' FLUORESCENT STRIP FIXTURE
- 1' X 4' FLUORESCENT STRIP FIXTURE
- 1' X 4' FLUORESCENT SURFACE MOUNTED
- ATTIC ACCESS

A1 A103 REFLECTED CEILING PLAN -FIRST FLOOR

3/16" = 1'-0"

N

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Sheet Contents
REFLECTED CEILING PLAN FIRST -FLOOR

Sheet No.
A103

Plot Date Time: 12/17/2021 8:42:11 AM

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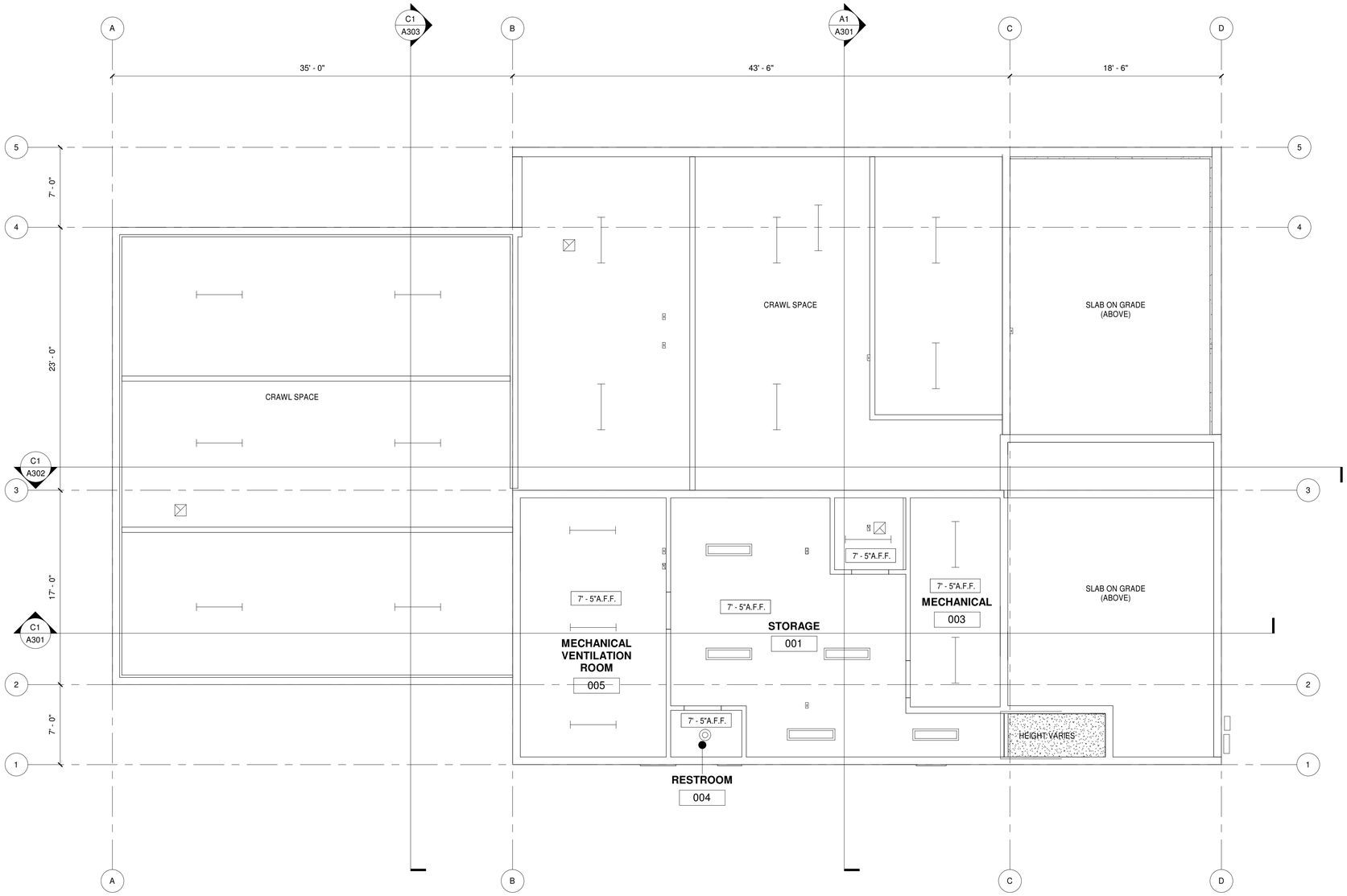

LEGEND

- GWB CEILING
- FAN
- LIGHT FIXTURE SURFACE MOUNTED
- LIGHT FIXTURE RECESSED MOUNTED
- EXIT LIGHT CEILING MOUNTED
- EXHAUST AIR DUCT UP INTO FIRST FLOOR
- SUPPLY AIR DUCT UP INTO FIRST FLOOR
- EXHAUST AIR GRILLE
- 1' X 2' FLUORESCENT STRIP FIXTURE
- 1' X 4' FLUORESCENT STRIP FIXTURE
- 1' X 4' FLUORESCENT SURFACE MOUNTED

A1 / A104 REFLECTED CEILING PLAN -BASEMENT

3/16" = 1'-0"

N

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REFLECTED CEILING PLAN

Sheet No.
A104

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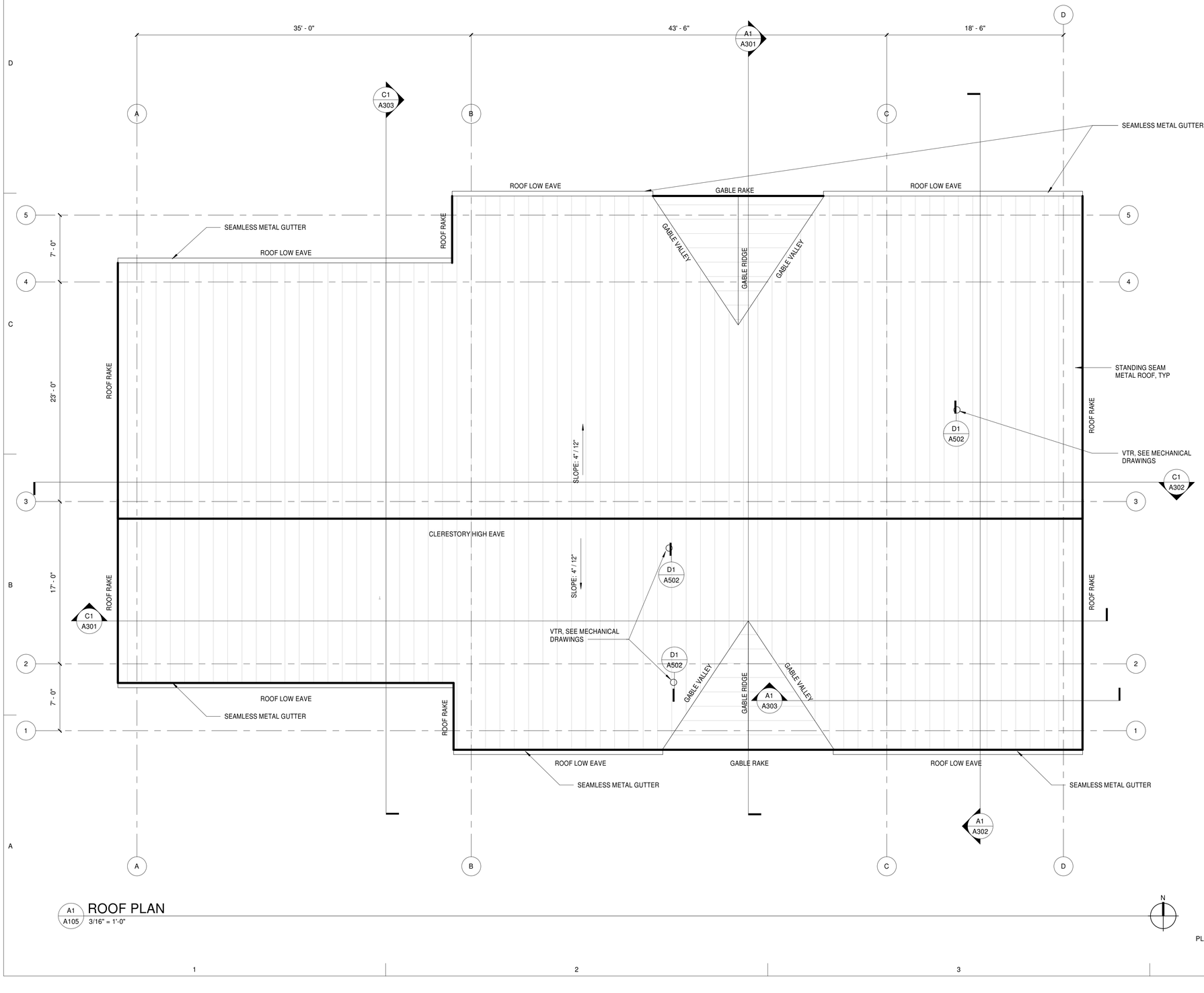

A1 A105 ROOF PLAN
3/16" = 1'-0"

N
PLAN NORTH

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ROOF PLAN

Sheet No.
A105

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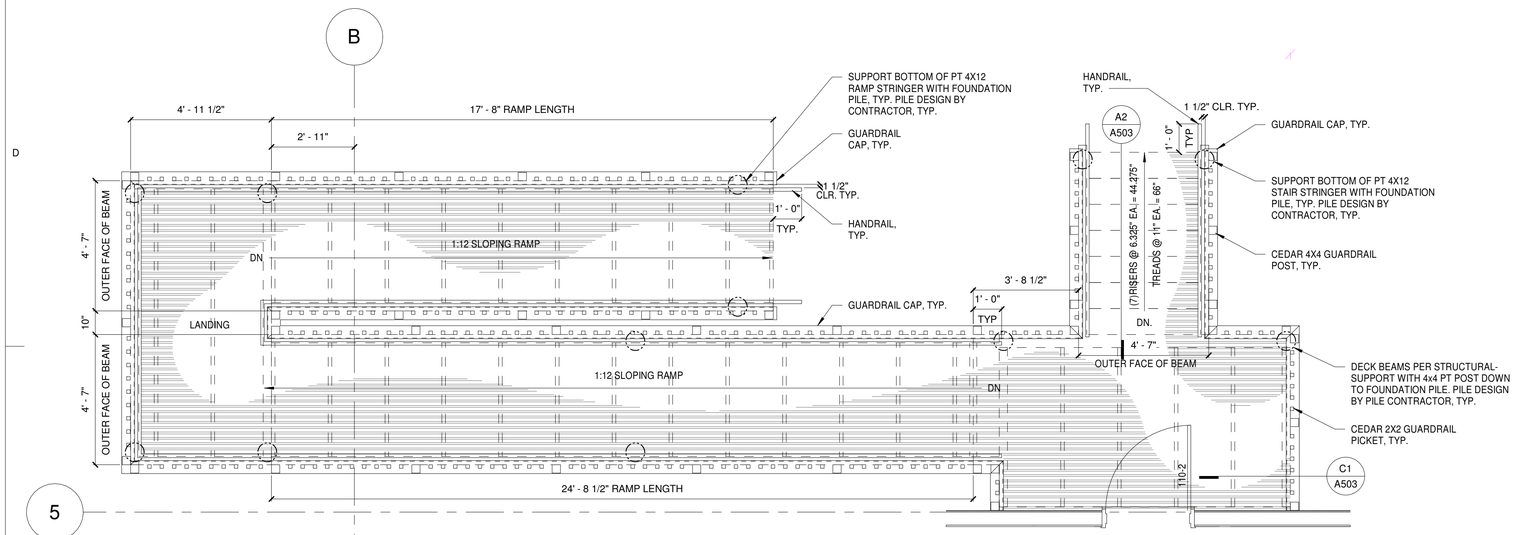
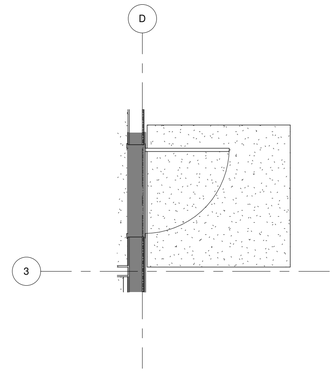


C1 A106 GRADE/FINISH FLOOR- NORTH ACCESS

3/8" = 1'-0"

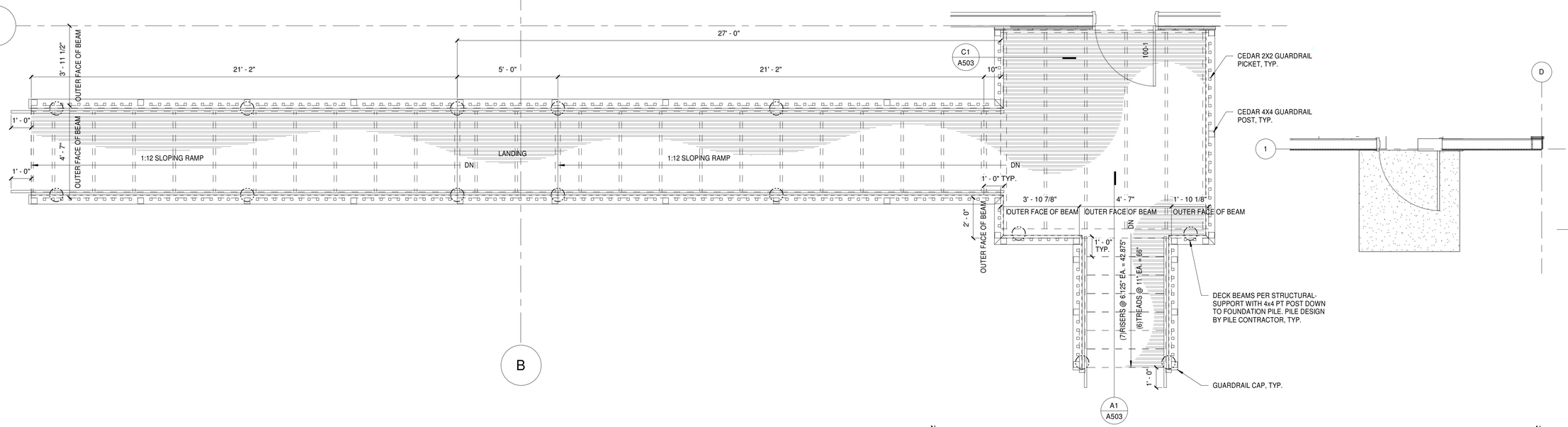
PLAN NORTH



C4 A106 GRADE/FINISH FLOOR - EAST ACCESS

3/8" = 1'-0"

PLAN NORTH



A1 A106 GRADE/FINISH FLOOR - SOUTH ACCESS

3/8" = 1'-0"

PLAN NORTH

A4 A106 GRADE/FINISH FLOOR - 2ND SOUTH ACCESS

3/8" = 1'-0"

PLAN NORTH

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Drawn by Author	Date 12/17/2021
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ENLARGED PLANS

Sheet No.

A106

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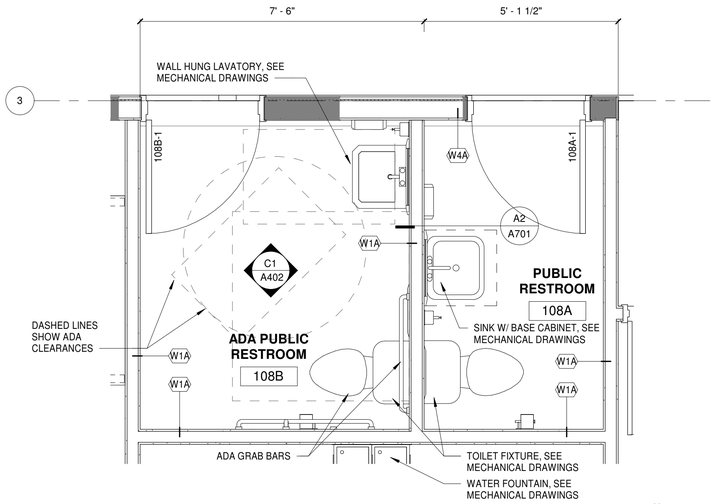
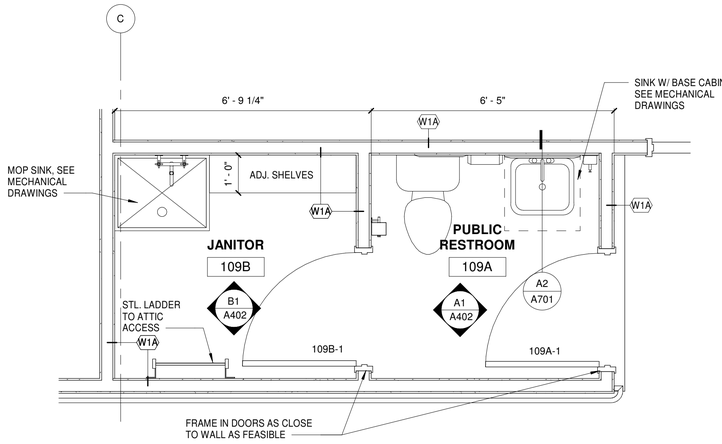


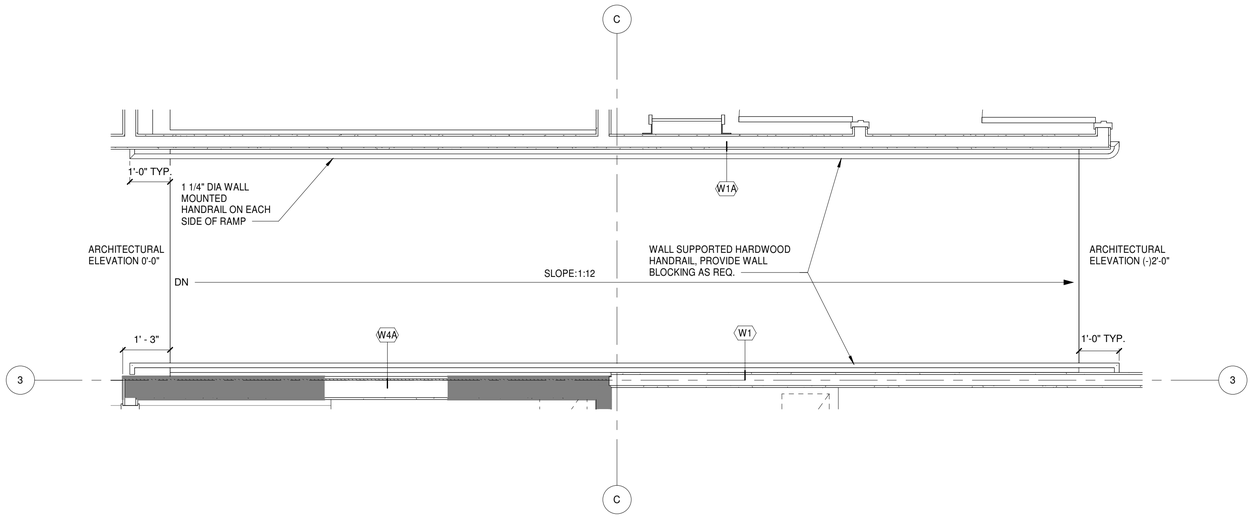
C1 A107 ENLARGED PLAN - RESTROOMS
1/2" = 1'-0"

N PLAN NORTH



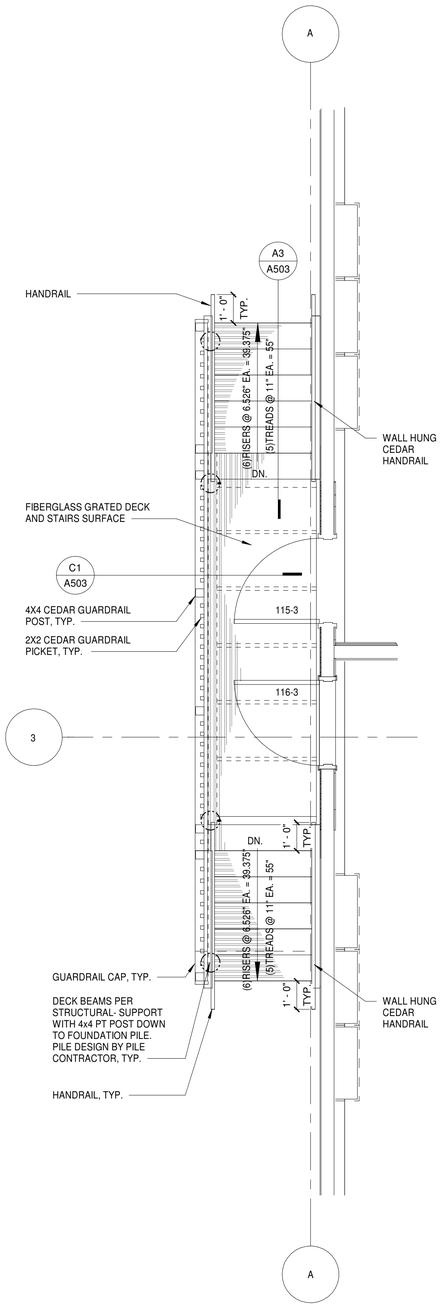
C2 A107 ENLARGED PLAN - JANITOR & PUBLIC RESTROOM
1/2" = 1'-0"

N PLAN NORTH



A1 A107 INTERIOR RAMP
1/2" = 1'-0"

N PLAN NORTH



A4 A107 EXTERIOR STAIRS - WEST
3/8" = 1'-0"

N PLAN NORTH

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ENLARGED PLANS

Sheet No.
A107

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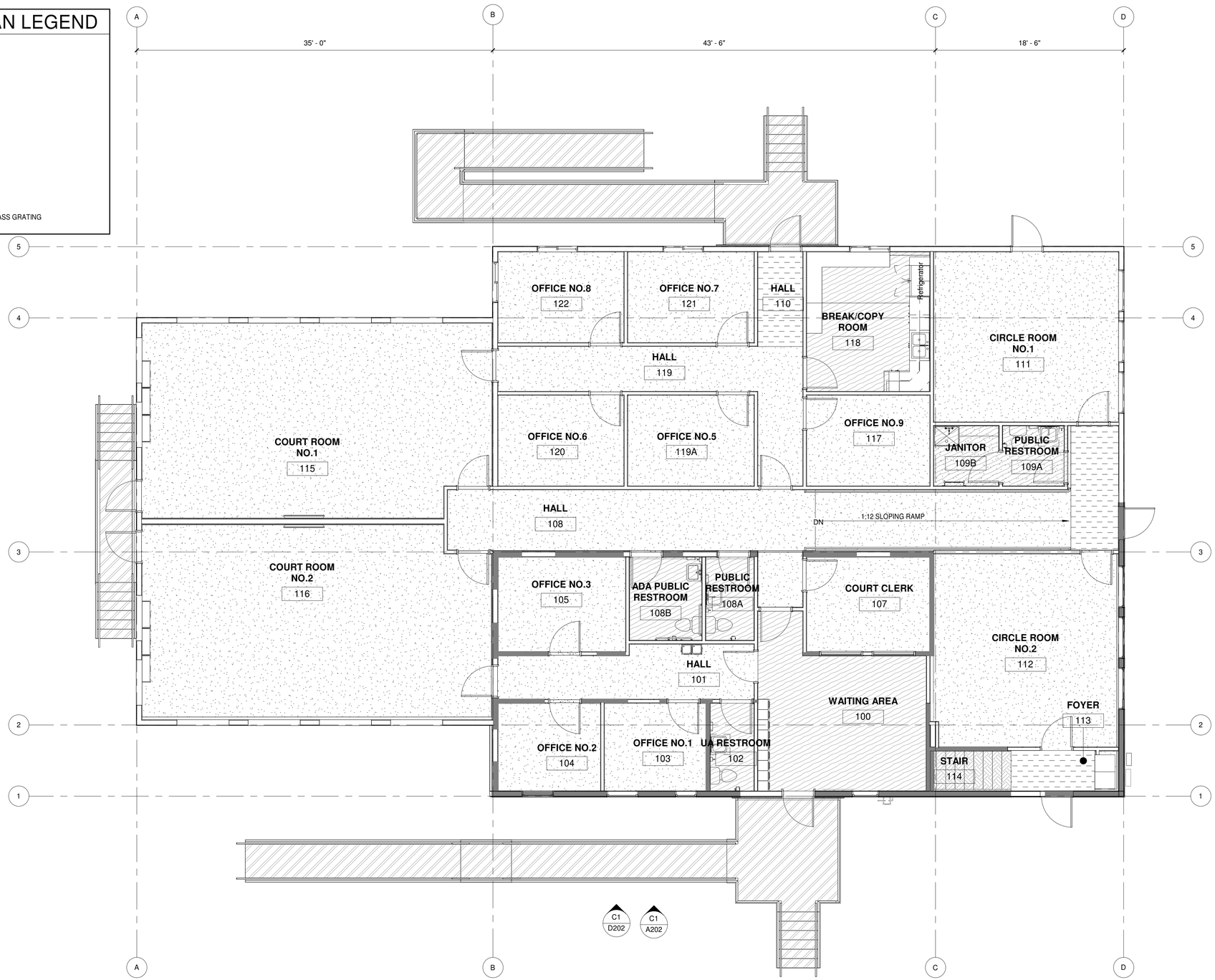
FINISH FLOOR PLAN LEGEND

- SHEET VINYL (F4)
- RUBBER STAIR TREAD (F1)
- BROADLOOM CARPET (F3)
- WALK-OFF CARPET (F2)
- ADA COMPLIANT ANTI-SLIP FIBERGLASS GRATING



A1 / A108 FLOOR PLAN - FIRST FLOOR FINISH FLOOR

3/16" = 1'-0"

N

PLAN NORTH

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Sheet Contents
FINISH FLOOR PLAN

Sheet No.
A108

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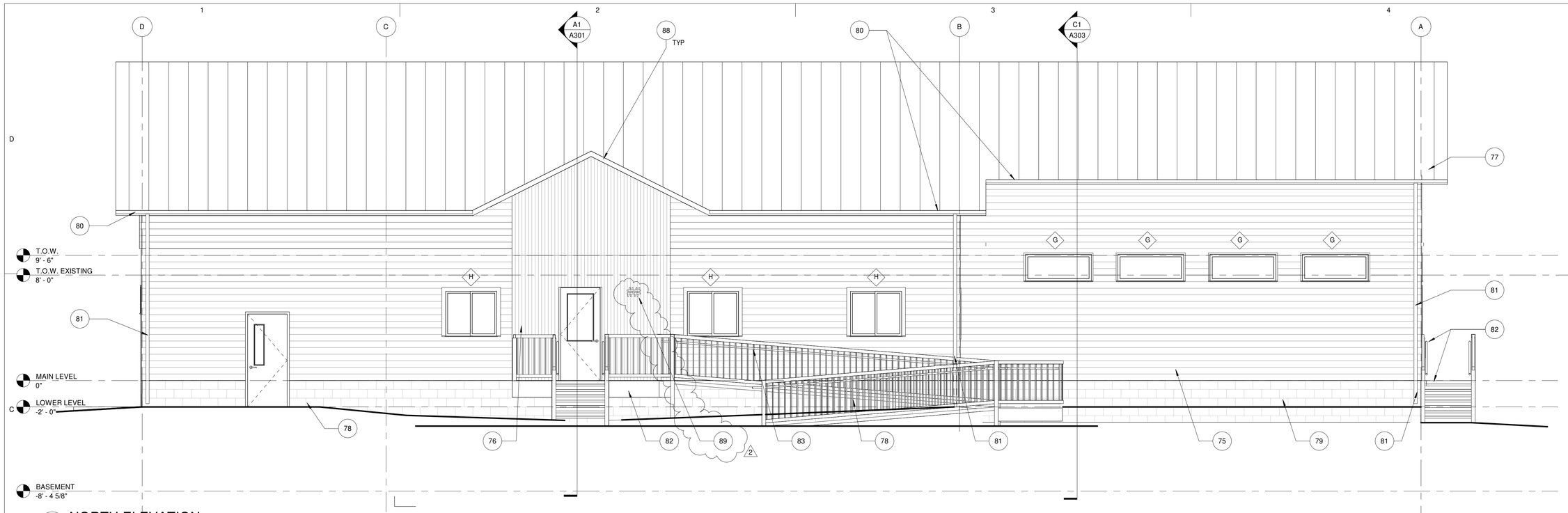
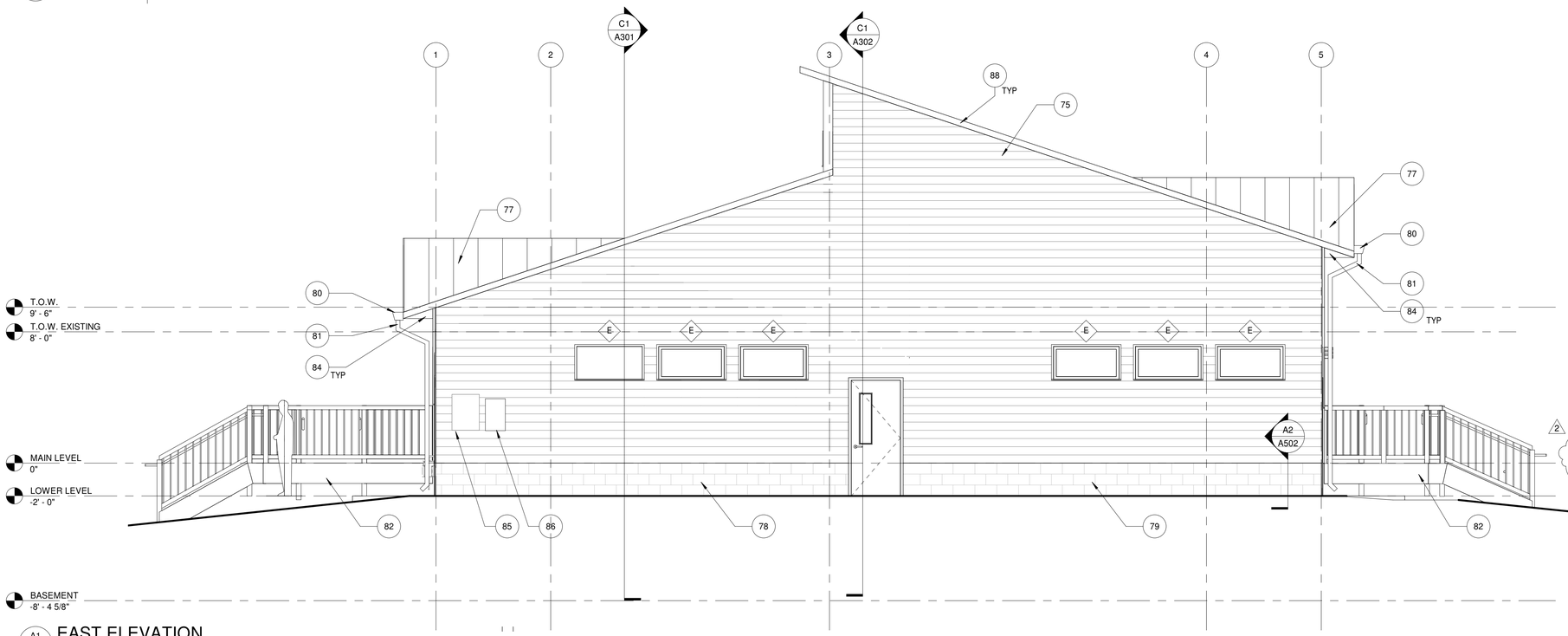


C1 A201 NORTH ELEVATION
1/4" = 1'-0"



A1 A201 EAST ELEVATION
1/4" = 1'-0"

SHEET NOTES

75	HORZ. LAPPED STEEL SIDING - BASIS OF DESIGN: TRUCEDAR STEEL SIDING - SINGLE 6" HORZ. BEVEL NORWOOD 509
76	VERT. MTL. SIDING - BASIS OF DESIGN LONGBOARD 4" V-GROOVE - DARK NATIONAL WALNUT: CODE 1806/02-733, RESIN 2604, GLOSS 10+/-5
77	STANDING SEAM METAL ROOF: BASIS OF DESIGN NORTH STAR METALS STANDING SEAM ROOF, 26 GA DARK BROWN SMP
78	EXISTING CMU BLOCK PAINTED, REPAINT EXIST. COLOR
79	CMU BLOCK PAINTED, PAINT TO MATCH EXIST. COLOR
80	SEAMLESS METAL GUTTER, MATCH ROOFING COLOR
81	MTL. DOWNSPOUT, MATCH ROOFING COLOR
82	P.T. WOOD FRAMED STAIR & RAILING WITH ADA COMPLIANT, ANTI-SLIP GRATED FIBERGLASS DECKING / STAIR TREADS
83	P.T. WOOD FRAMED RAMP & RAILING WITH ADA COMPLIANT, ANTI-SLIP GRATED FIBERGLASS DECKING
84	VENTED ENCLOSED ROOF SOFFIT, BASIS OF DESIGN: TRU-VENT SOFFIT, WICKER 809
85	EXISTING ELECTRICAL UTILITY SERVICE PANEL
86	RELOCATED TELECOM UTILITY SERVICE PANEL
87	EXISTING GAS UTILITY SERVICE
88	MTL. ROOF FLASHING, MATCH ROOF COLOR
89	BUILDING IDENTIFICATION (COORDINATE WITH OWNER), TO BE NOT LESS THAN 4" IN HEIGHT AND 0.5" IN WIDTH

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Revisions

No.	Description	Date
2	Plan Review	7/30/21

Drawn by Author	Date 12/17/2021
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Sheet Contents
EXTERIOR ELEVATIONS

Sheet No.
A201

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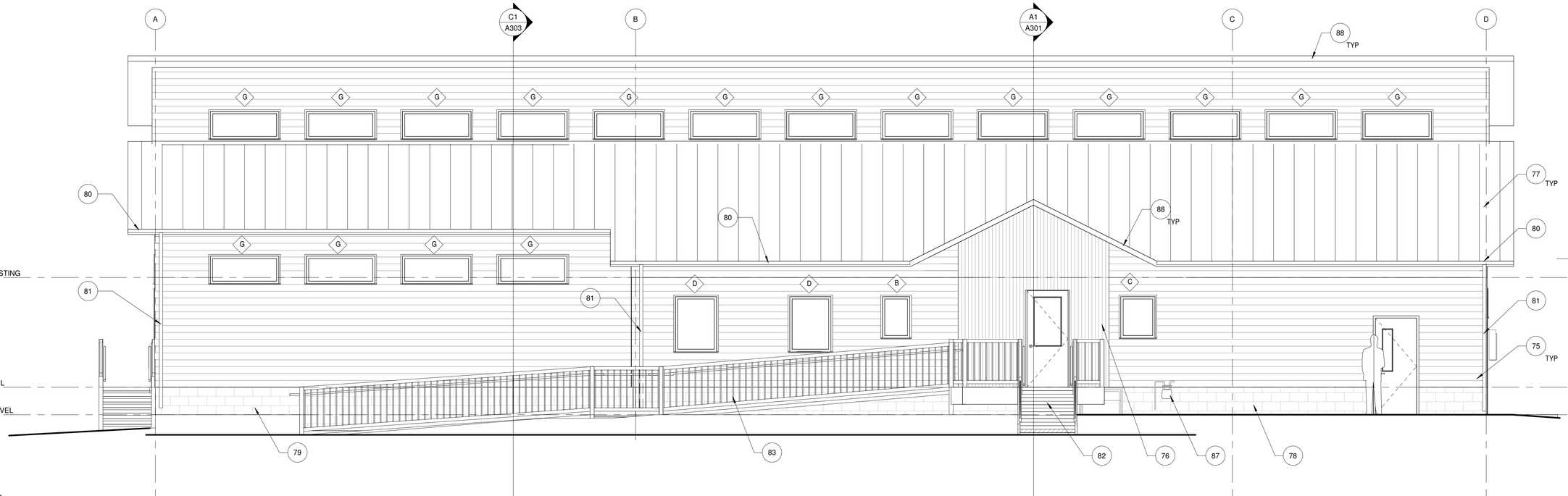
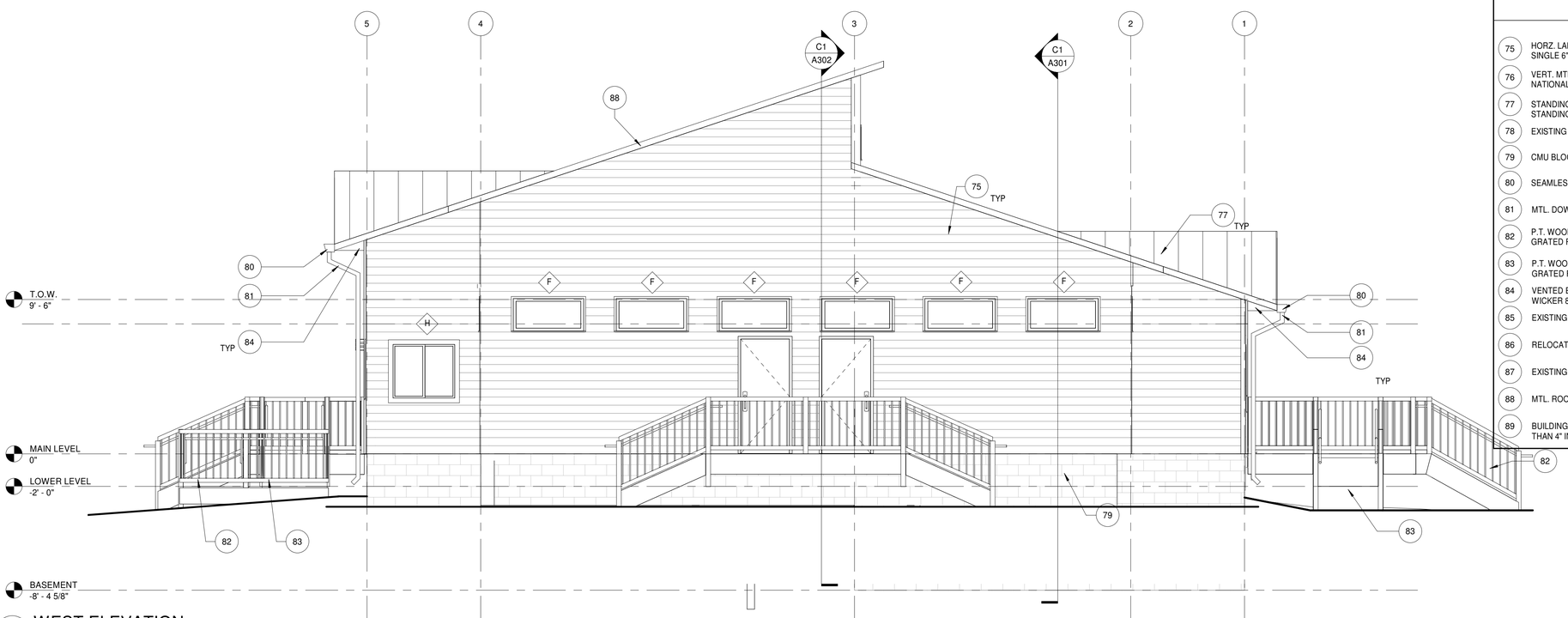


C1 / A202 SOUTH ELEVATION
1/4" = 1'-0"



A1 / A202 WEST ELEVATION
1/4" = 1'-0"

SHEET NOTES

75	HORZ. LAPPED STEEL SIDING - BASIS OF DESIGN: TRUCEDAR STEEL SIDING - SINGLE 6" HORZ. BEVEL NORWOOD 509
76	VERT. MTL. SIDING - BASIS OF DESIGN LONGBOARD 4" V-GROOVE - DARK NATIONAL WALNUT: CODE 1806/02-733, RESIN 2604, GLOSS 10+/-5
77	STANDING SEAM METAL ROOF: BASIS OF DESIGN NORTH STAR METALS STANDING SEAM ROOF, 26 GA DARK BROWN SMP
78	EXISTING CMU BLOCK PAINTED, REPAINT EXIST. COLOR
79	CMU BLOCK PAINTED, PAINT TO MATCH EXIST. COLOR
80	SEAMLESS METAL GUTTER, MATCH ROOFING COLOR
81	MTL. DOWNSPOUT, MATCH ROOFING COLOR
82	P.T. WOOD FRAMED STAIR & RAILING WITH ADA COMPLIANT, ANTI-SLIP GRATED FIBERGLASS DECKING / STAIR TREADS
83	P.T. WOOD FRAMED RAMP & RAILING WITH ADA COMPLIANT, ANTI-SLIP GRATED FIBERGLASS DECKING
84	VENTED ENCLOSED ROOF SOFFIT, BASIS OF DESIGN: TRU-VENT SOFFIT, WICKER 809
85	EXISTING ELECTRICAL UTILITY SERVICE PANEL
86	RELOCATED TELECOM UTILITY SERVICE PANEL
87	EXISTING GAS UTILITY SERVICE
88	MTL. ROOF FLASHING, MATCH ROOF COLOR
89	BUILDING IDENTIFICATION (COORDINATE WITH OWNER), TO BE NOT LESS THAN 4" IN HEIGHT AND 0.5" IN WIDTH

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KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions

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Plot Date Time: 12/17/2021 8:42:14 AM

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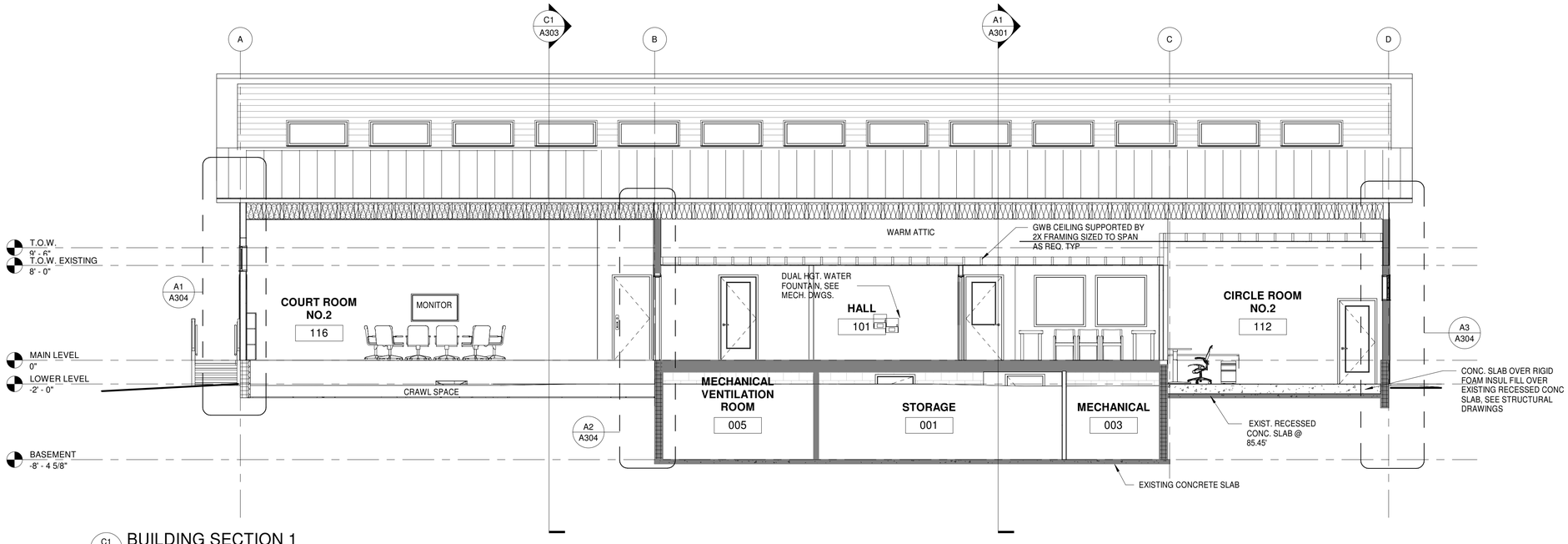
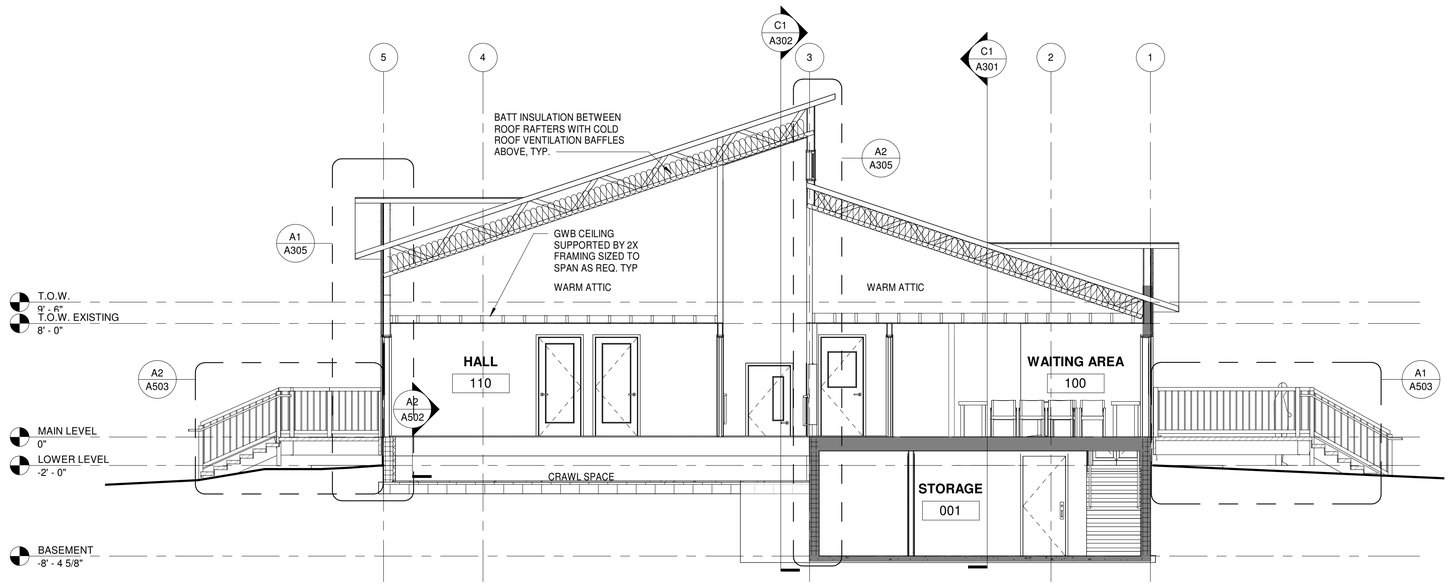


C1 A301 BUILDING SECTION 1
3/16" = 1'-0"



A1 A301 BUILDING SECTION 2
3/16" = 1'-0"

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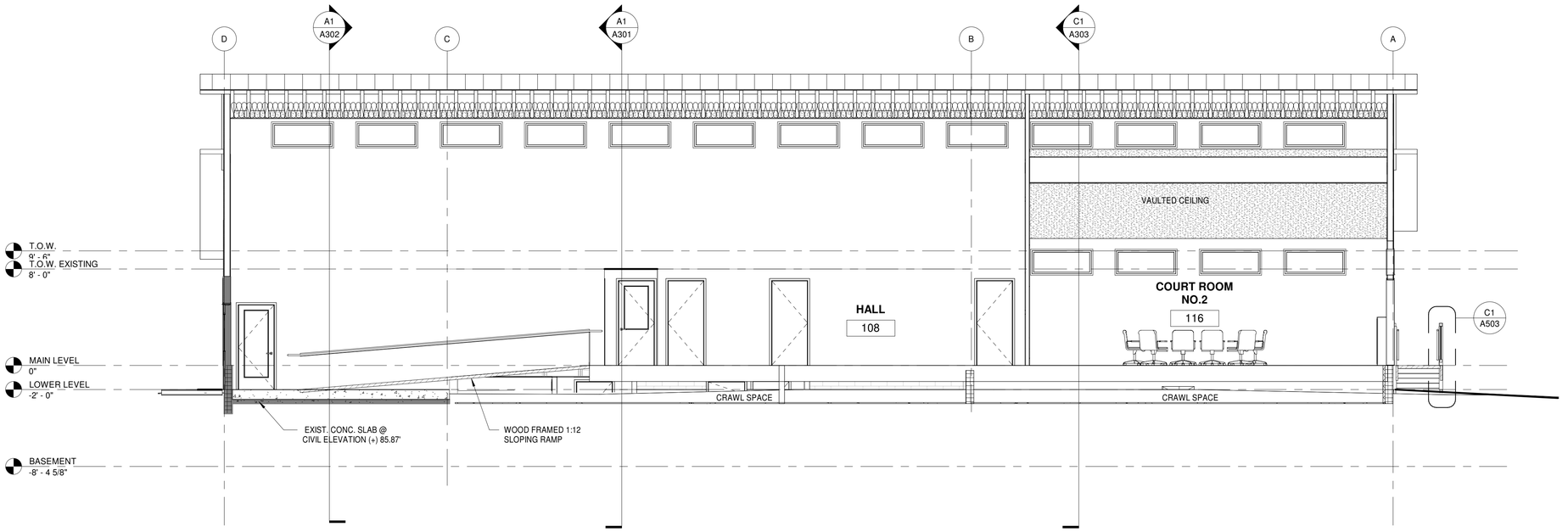
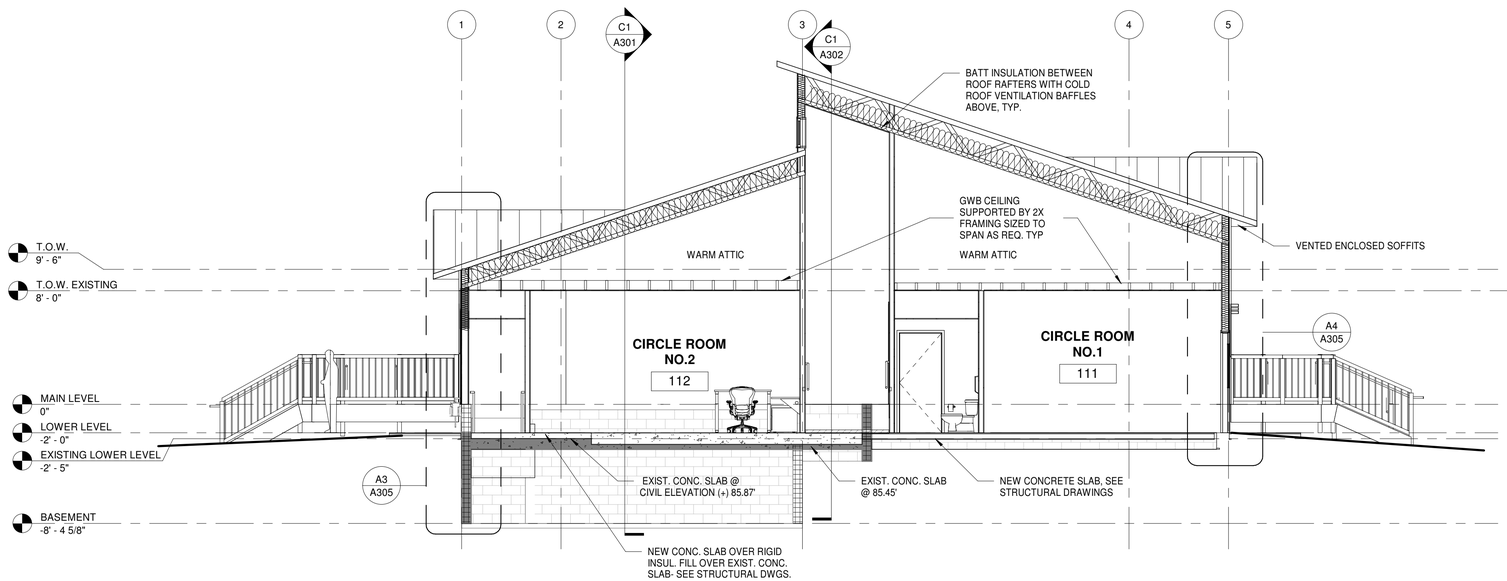


C1 A302 BUILDING SECTION 3

3/16" = 1'-0"



A1 A302 BUILDING SECTION 4

3/16" = 1'-0"

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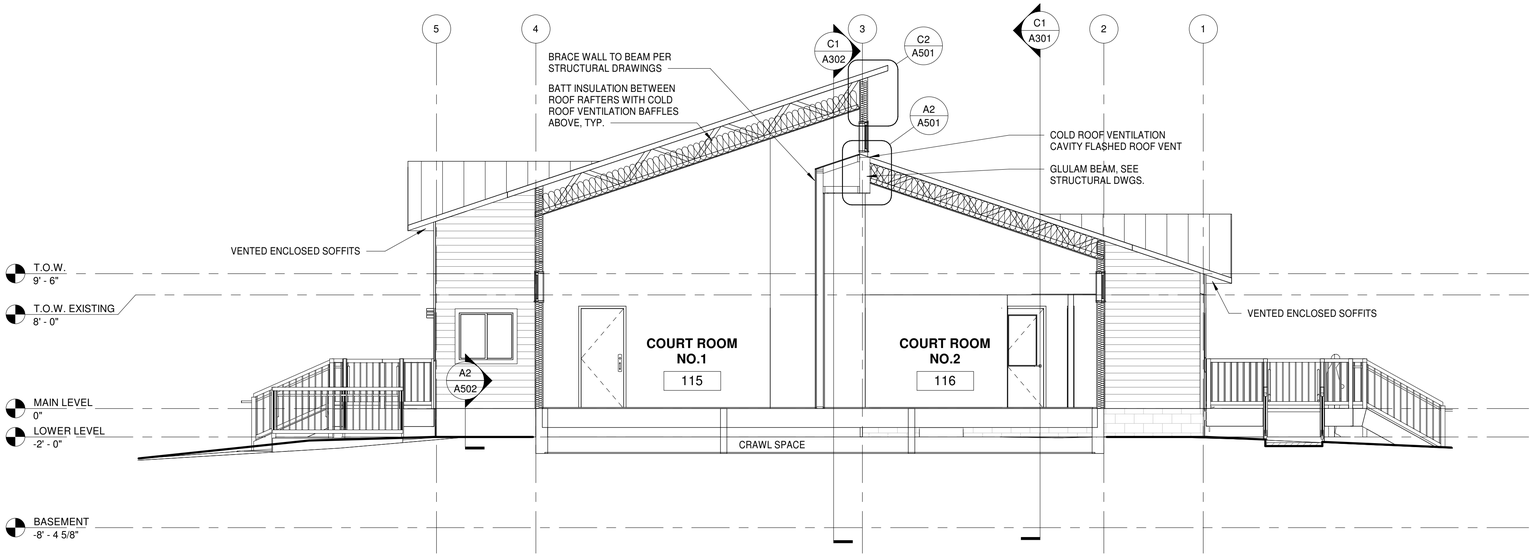

C1 A303 BUILDING SECTION 5

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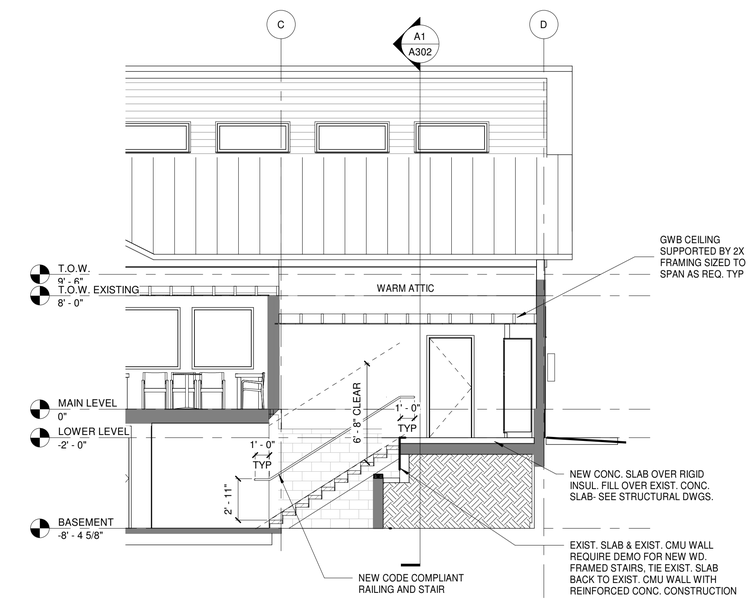

A1 A303 EXISTING STAIR SECTION

3/16" = 1'-0"

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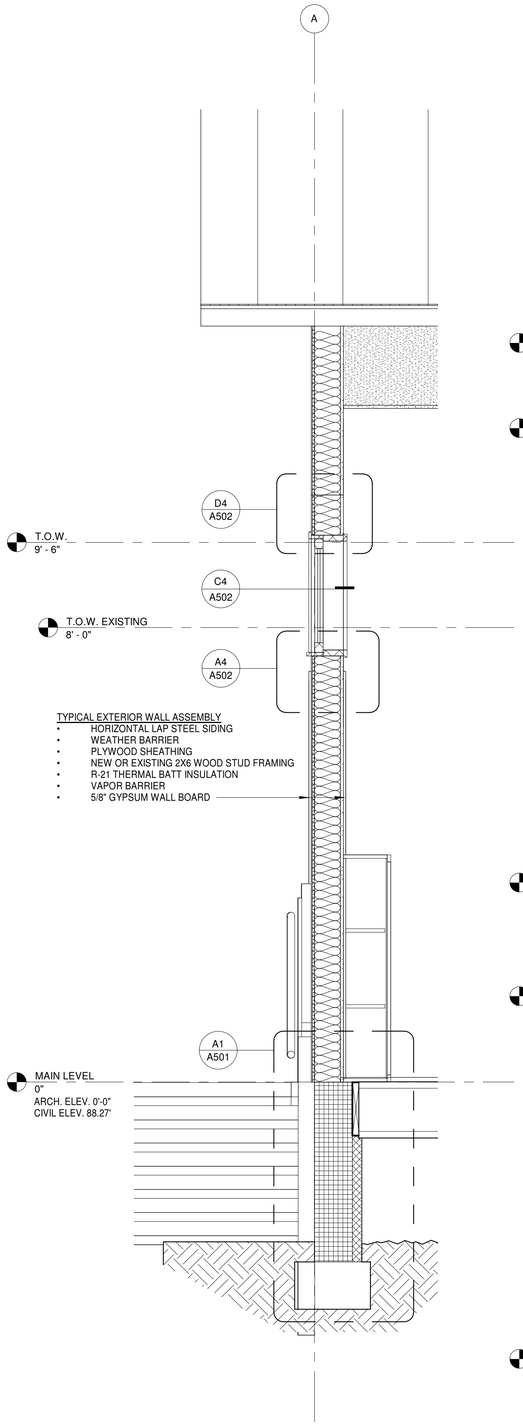

A1 A304 WEST WALL SECTION AT LOW ROOF
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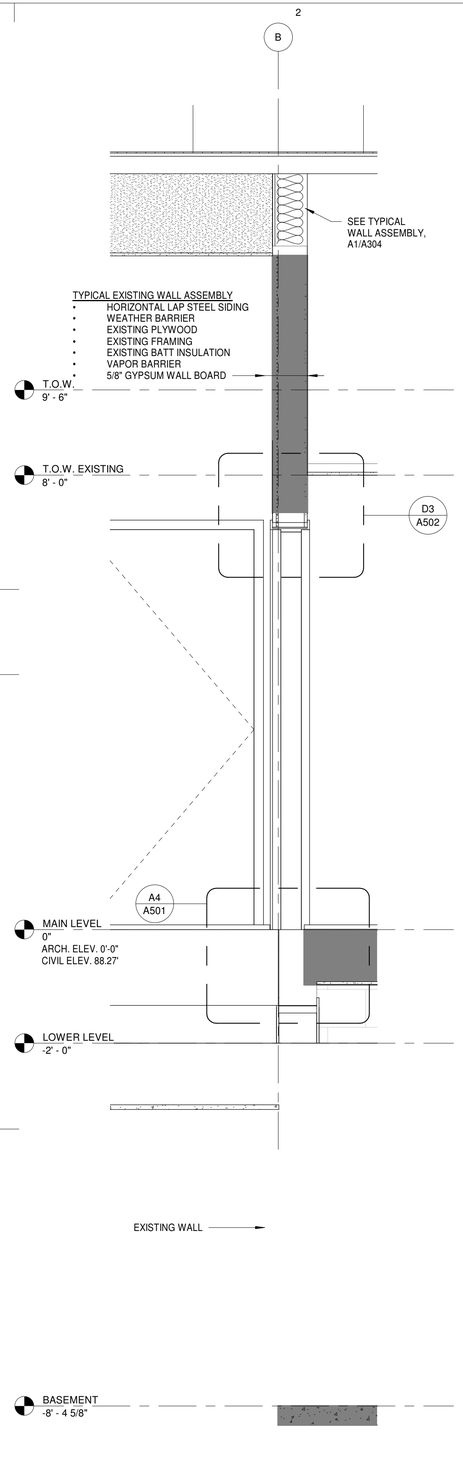
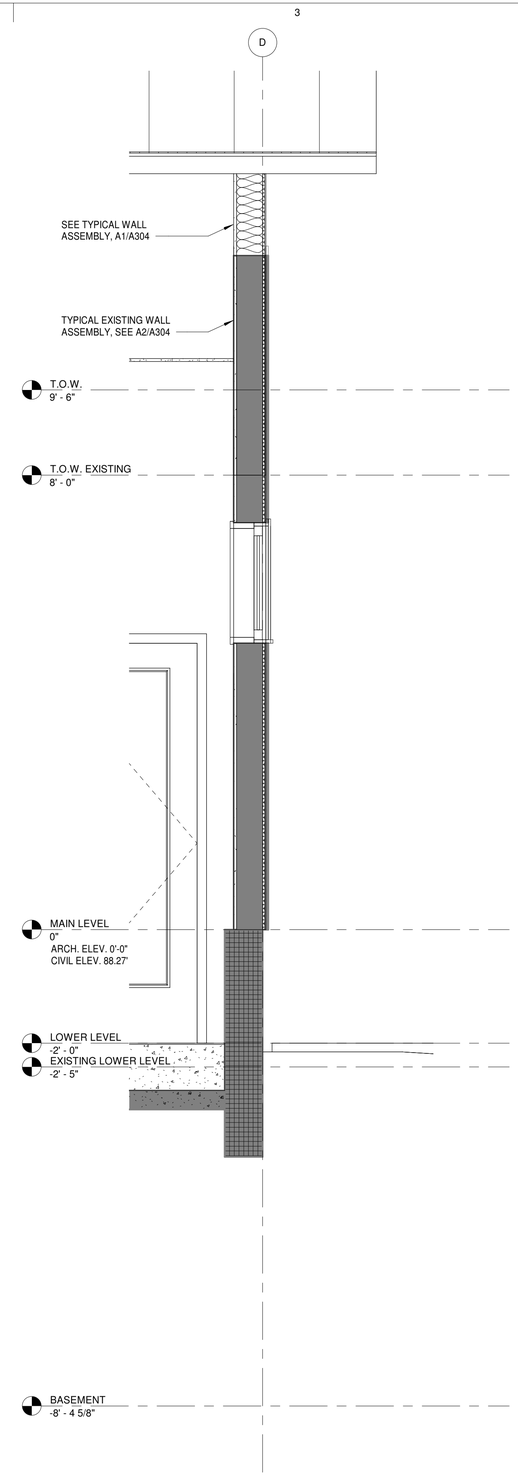


A2 A304 EXISTING WALL AT NEW CONSTRUCTION
3/4" = 1'-0"



A3 A304 EXISTING EAST WALL SECTION
3/4" = 1'-0"

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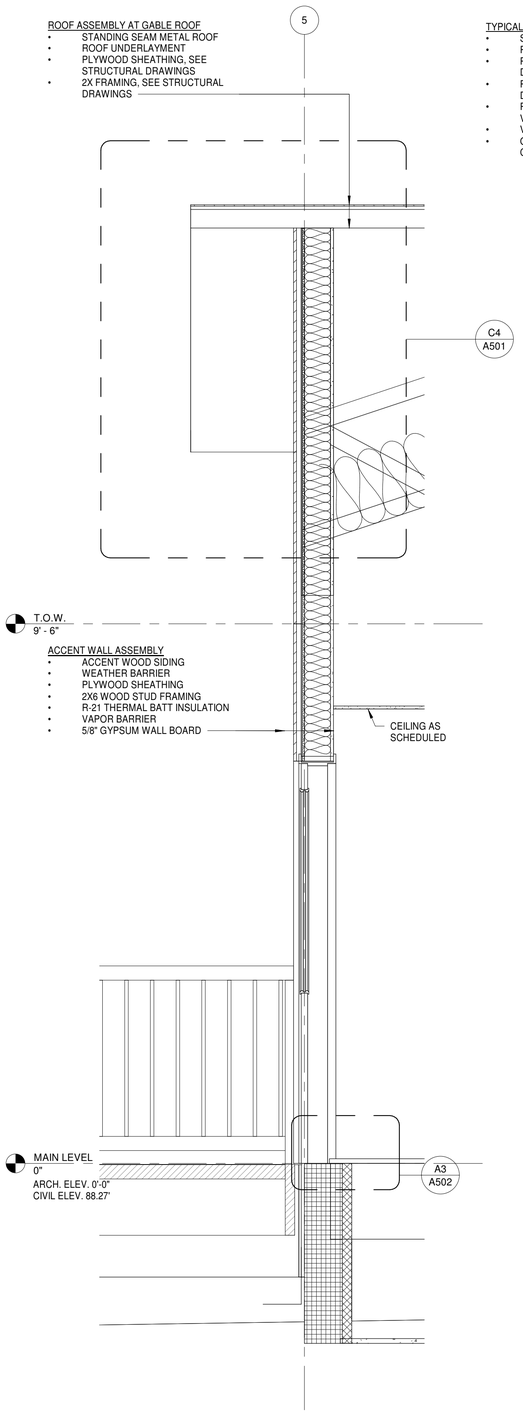

A1 A305 NORTH WALL SECTION AT GABLE ROOF
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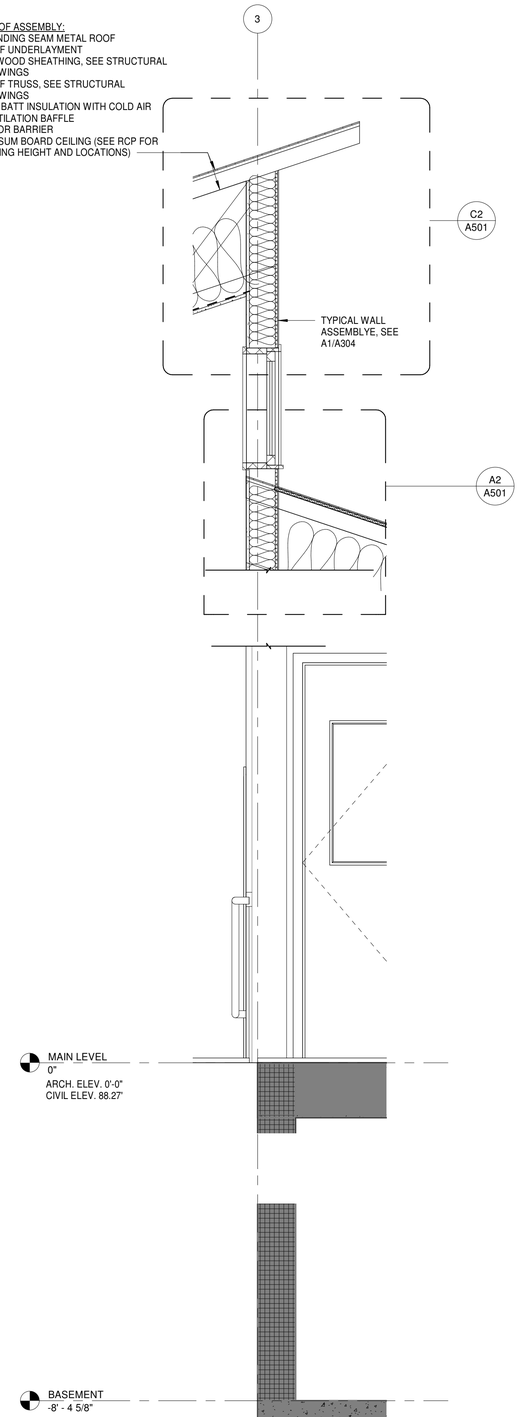
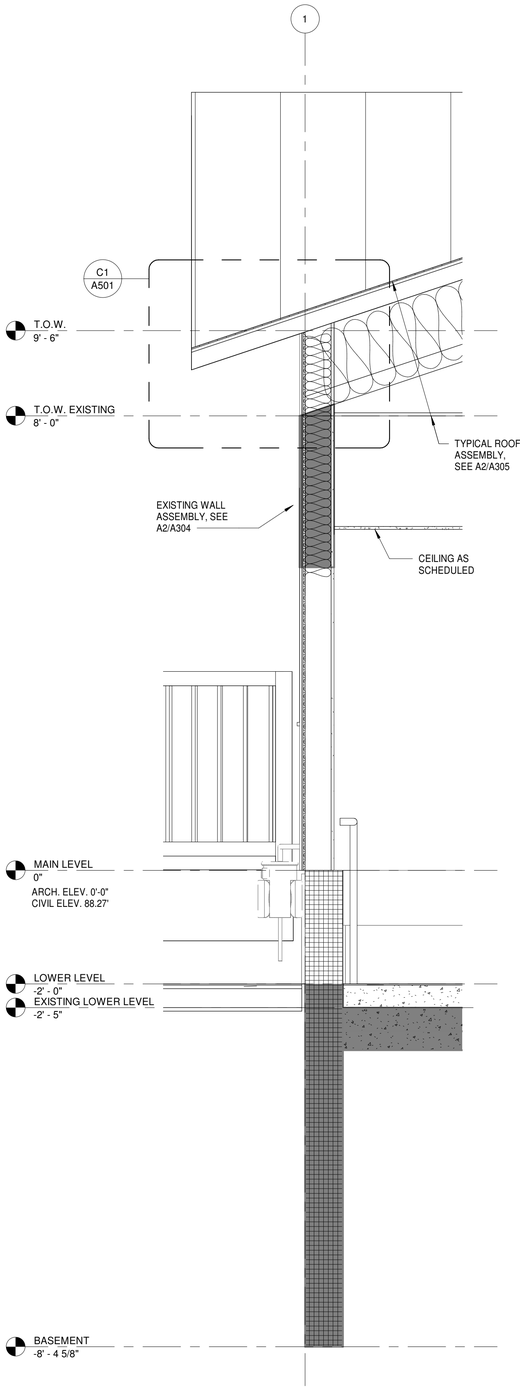


A2 A305 EXISTING WALL AT CLERESTORY
3/4" = 1'-0"



A3 A305 NORTH WALL SECTION
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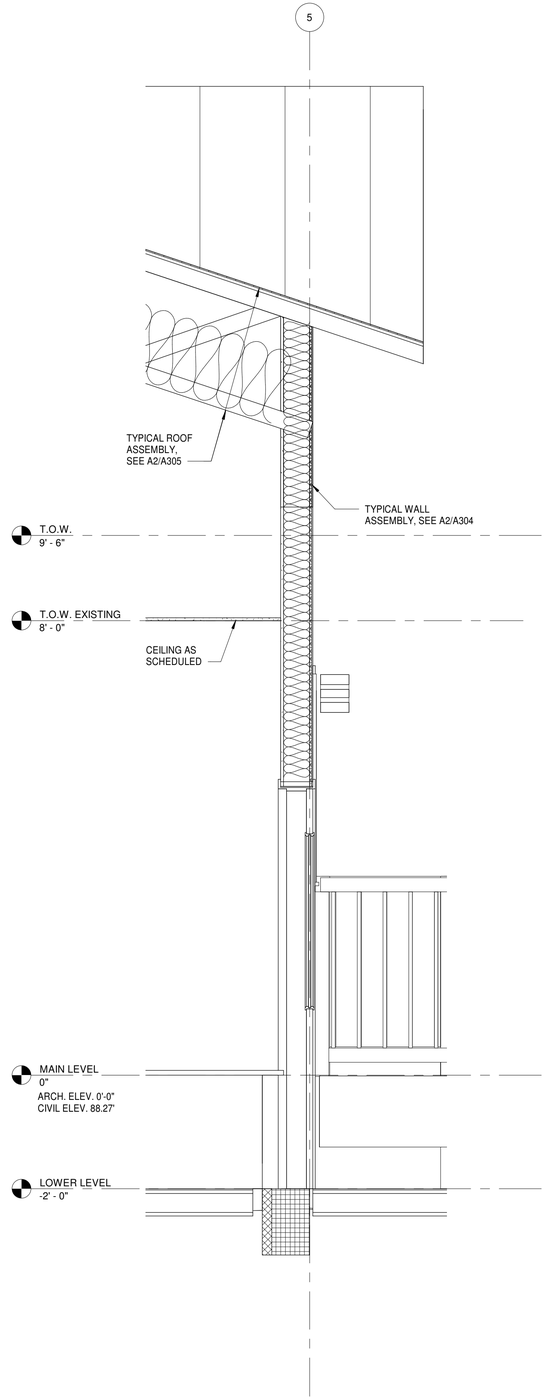

A4 A305 SOUTH WALL SECTION
3/4" = 1'-0"

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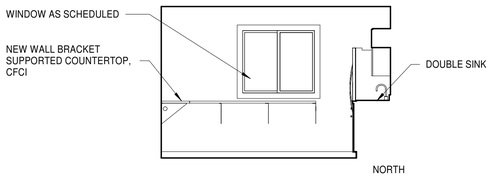
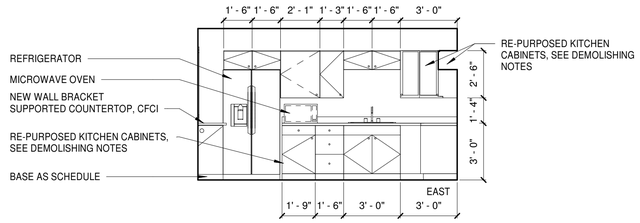
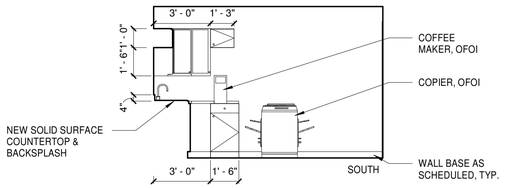
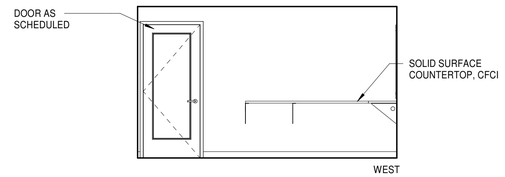


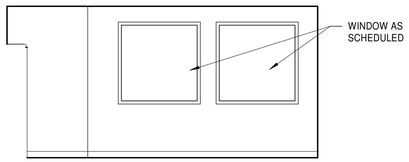


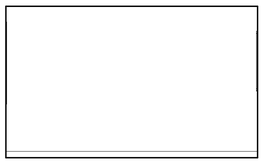


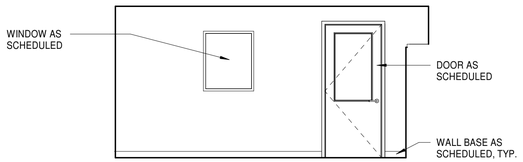


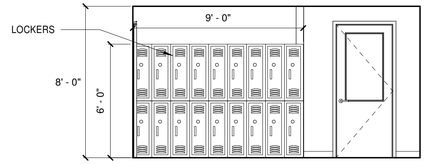
D1 / A401 BREAK/COPY ROOM 117

1/4" = 1'-0"



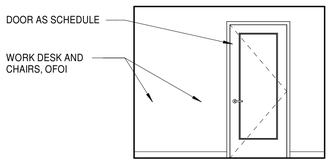


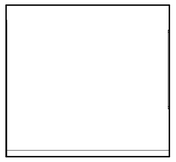


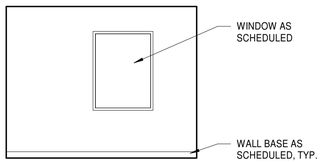


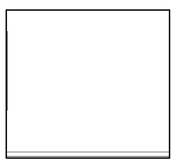
C1 / A401 WAITING AREA 100

1/4" = 1'-0"



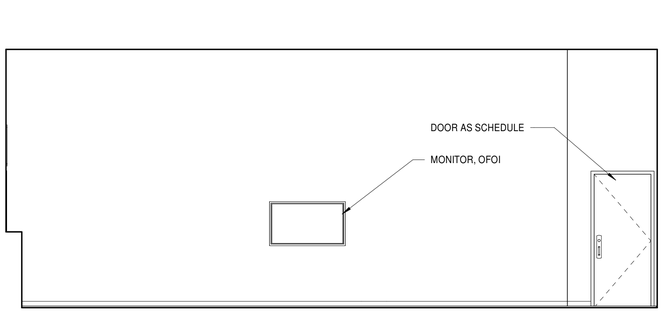


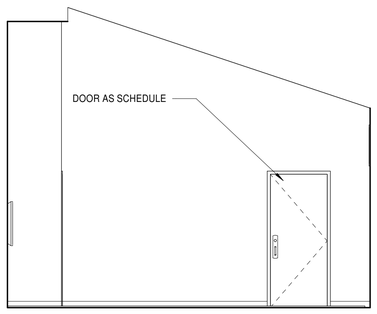


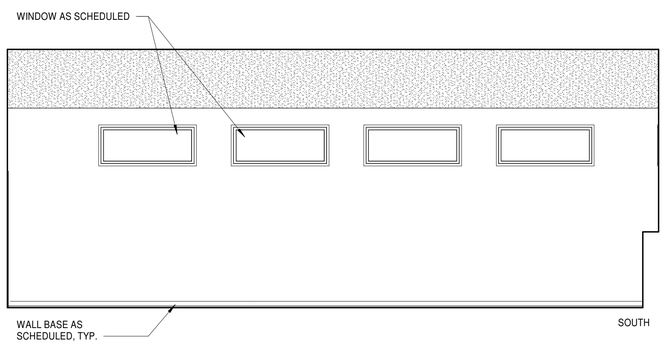


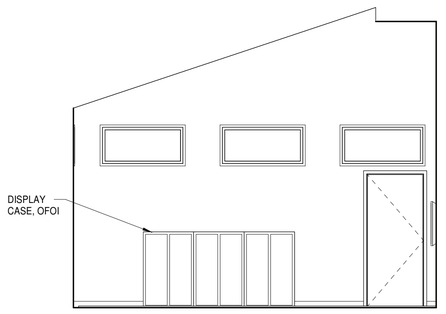
B1 / A401 OFFICE NO.2 104

1/4" = 1'-0"









A1 / A401 COURT ROOM 116

1/4" = 1'-0"

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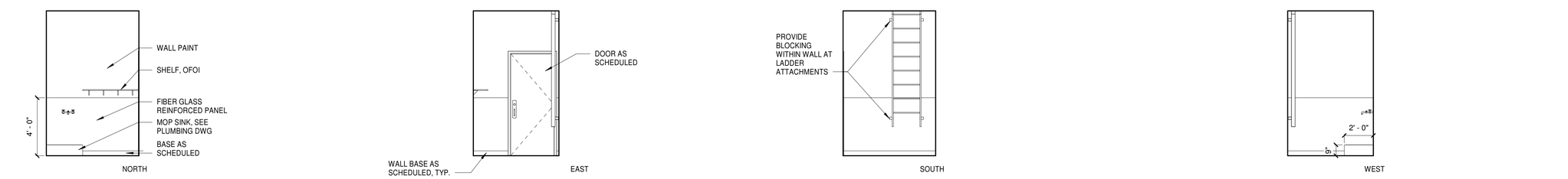
D1 / A402 UA RESTROOM 102

1/4" = 1'-0"

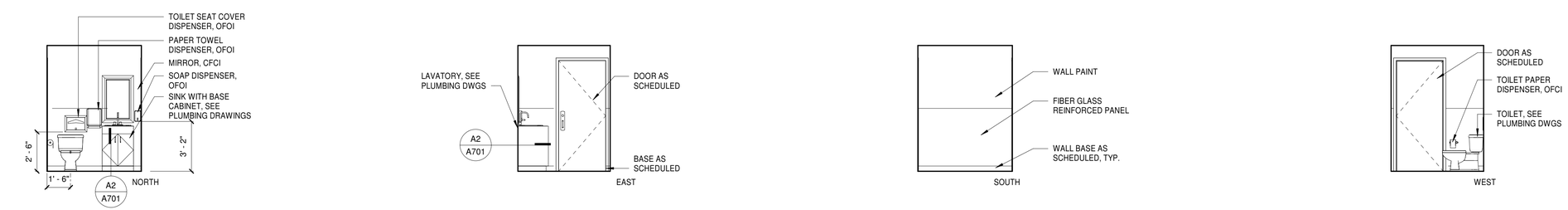
C1 / A402 ADA PUBLIC RESTROOM 108B

1/4" = 1'-0"



B1 / A402 JANITOR 109B

1/4" = 1'-0"



A1 / A402 PUBLIC RESTROOM 109A

1/4" = 1'-0"

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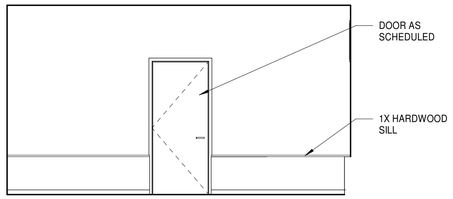

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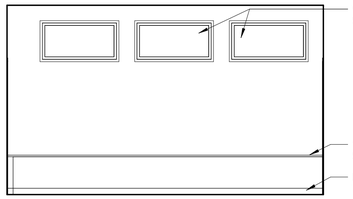

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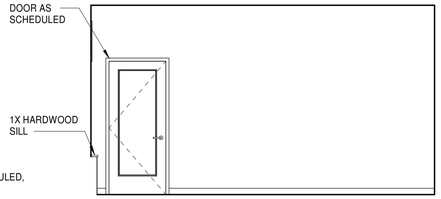
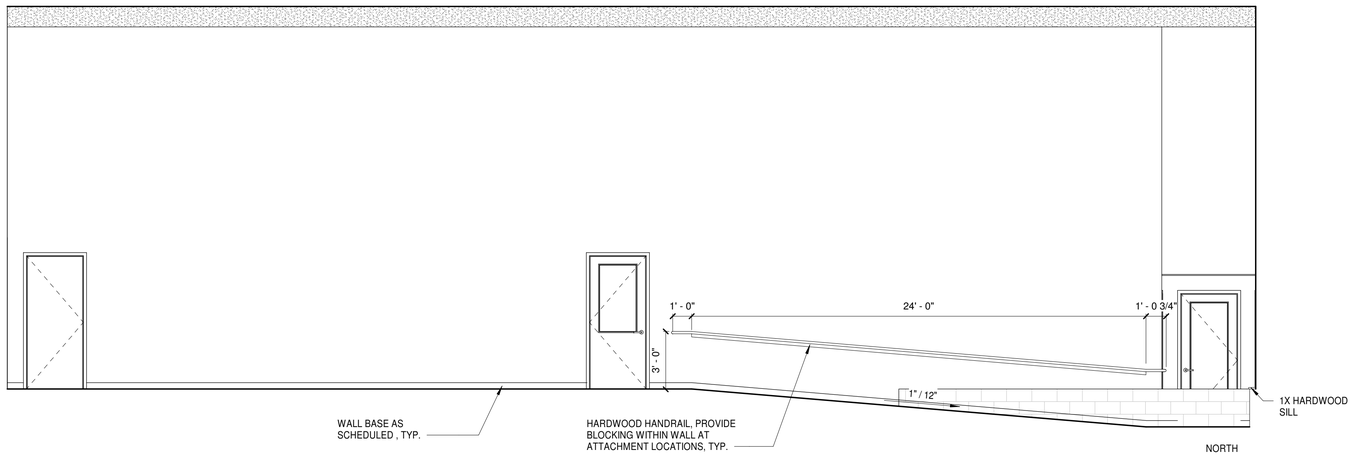


SOUTH

WEST

D1 / A403 CIRCLE ROOM NO.1 111

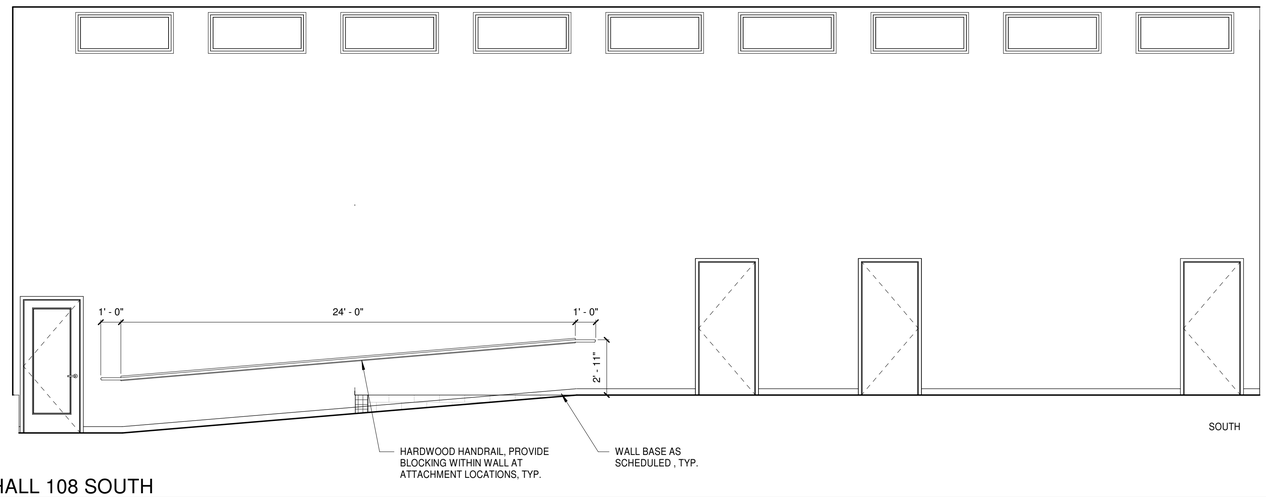
1/4" = 1'-0"



NORTH

B1 / A403 HALL 108

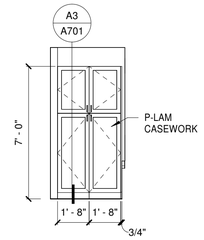
1/4" = 1'-0"



SOUTH

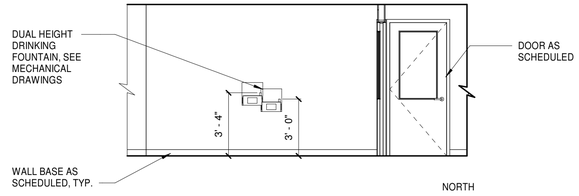
A1 / A403 HALL 108 SOUTH

1/4" = 1'-0"



B4 / A403 JANITOR SUPPLY EAST

1/4" = 1'-0"



NORTH

A4 / A403 HALL 101

1/4" = 1'-0"

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TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions

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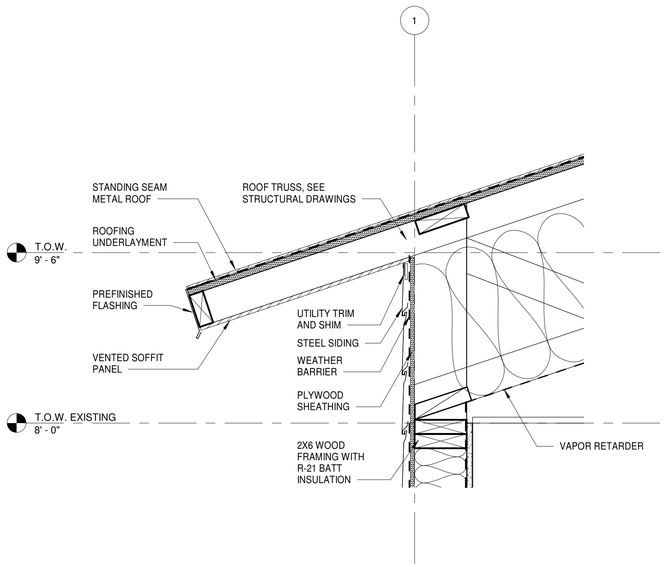
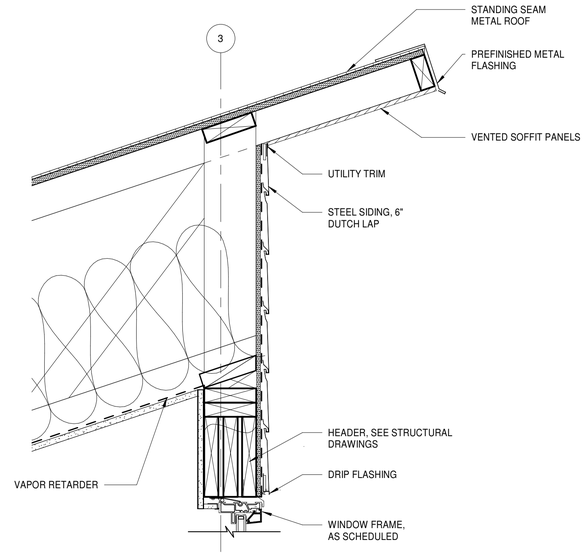
A403

Plot Date Time: 12/17/2021 8:42:17 AM

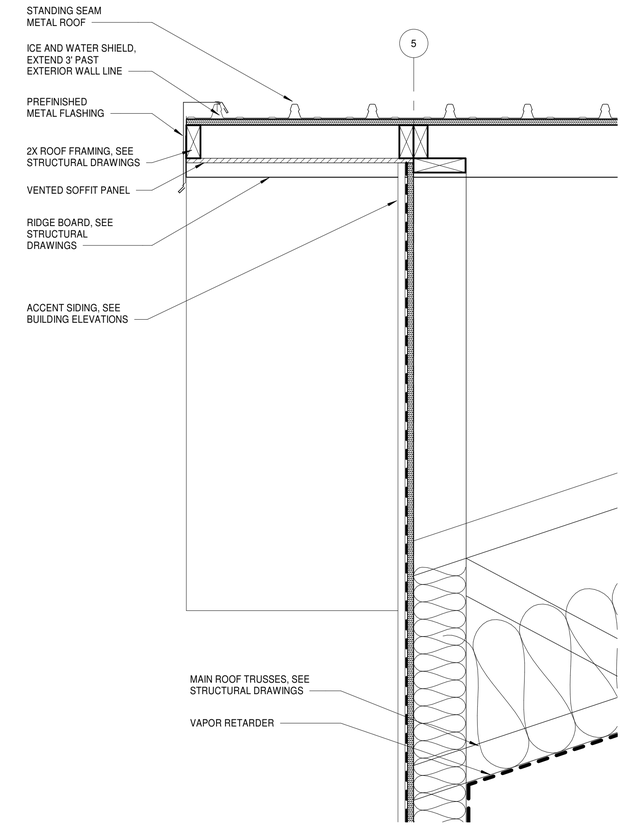
BIM 360://21014.01 KIT Tribal Courthouse/21014.01 KIT Tribal Courthouse R20.rvt



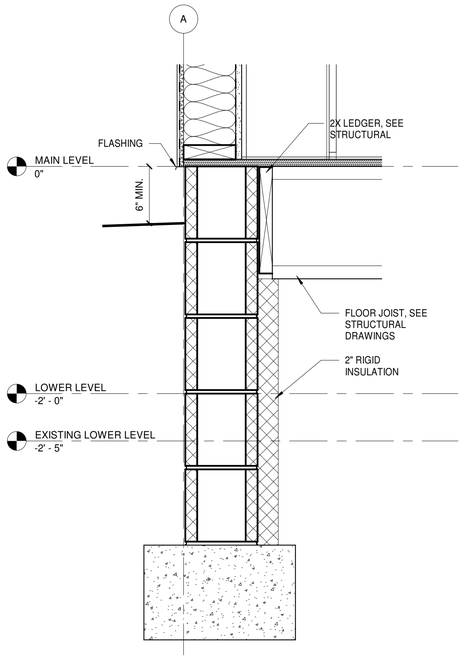
C1 / A501 WALL SECTION EAVE
1 1/2" = 1'-0"



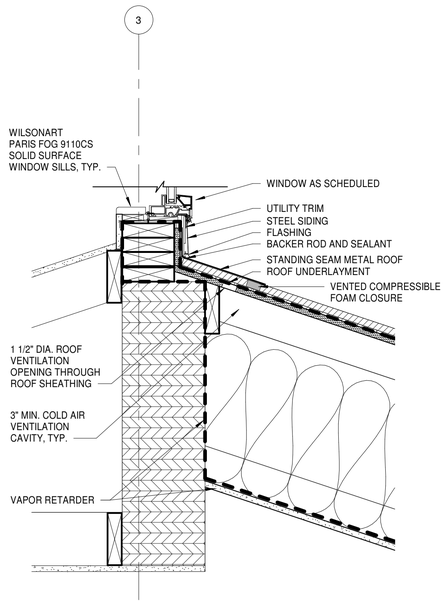
C2 / A501 HIGH EAVE DETAIL
1 1/2" = 1'-0"



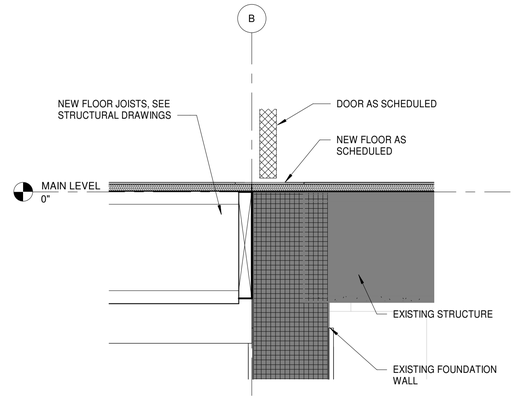
C4 / A501 GABLE ROOF RAKE
1 1/2" = 1'-0"



A1 / A501 WALL BASE
1 1/2" = 1'-0"



A2 / A501 WALL TO ROOF DETAIL
1 1/2" = 1'-0"



A4 / A501 EXISTING - NEW BASE DETAIL
1 1/2" = 1'-0"

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A501

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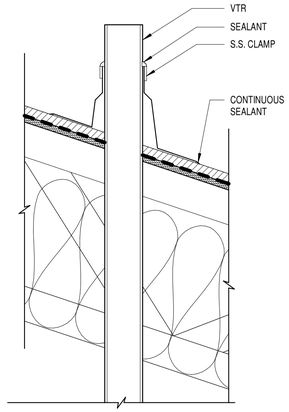
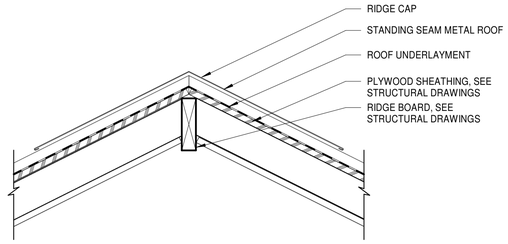
BIM 360://21014.01 KIT Tribal Courthouse/21014.01 KIT Tribal Courthouse R20.rvt



D1 A502 VTR DETAIL
1 1/2" = 1'-0"



D2 A502 ROOF RIDGE DETAIL
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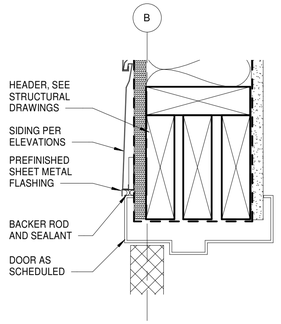
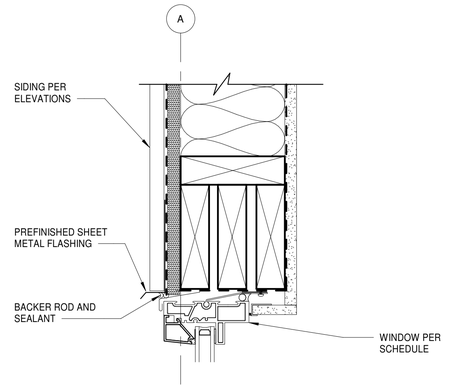
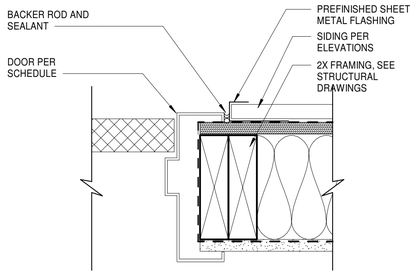


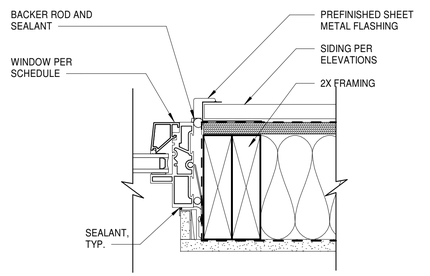
D3 A502 DOOR HEAD
3" = 1'-0"



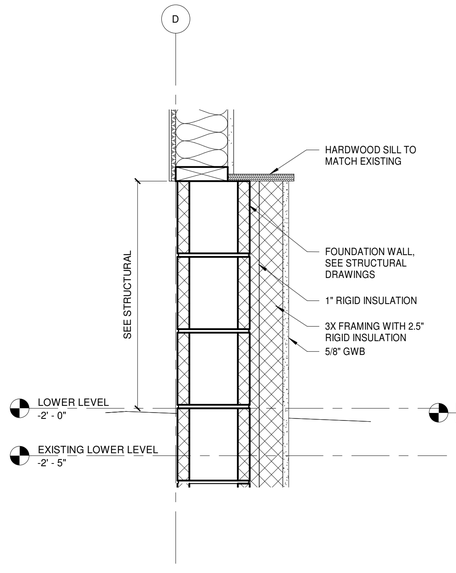
D4 A502 TYPICAL WINDOW HEAD
3" = 1'-0"



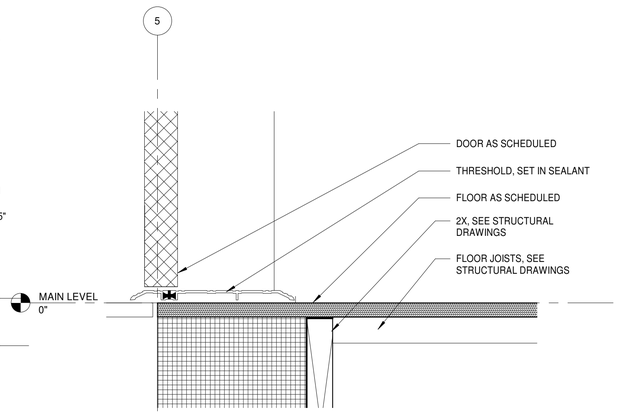
C3 A502 TYPICAL EXTERIOR DOOR JAMB
3" = 1'-0"



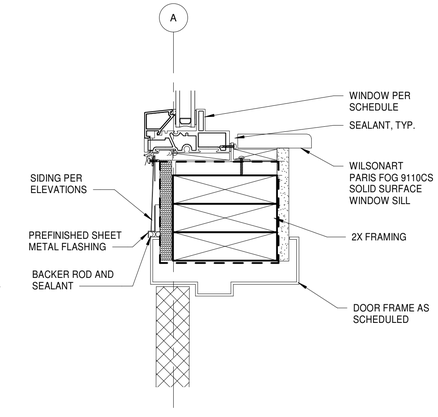
C4 A502 WINDOW JAMB
3" = 1'-0"



A2 A502 WALL BASE AT LOWER LEVEL
1 1/2" = 1'-0"



A3 A502 TYPICAL DOOR THRESHOLD
3" = 1'-0"



A4 A502 WINDOW SILL/DOOR HEAD
3" = 1'-0"

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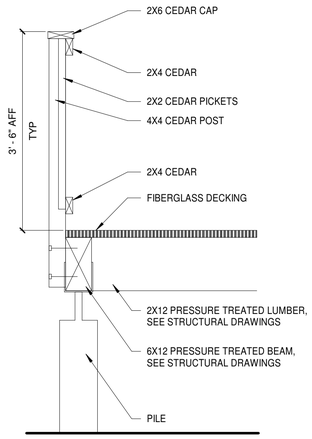
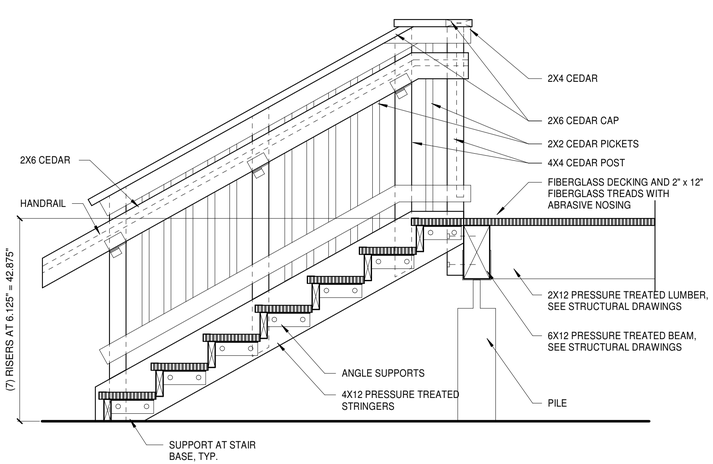
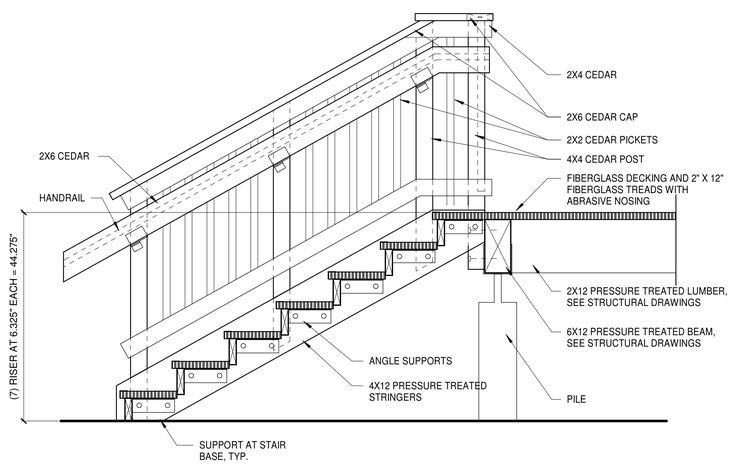
BIM 360://21014.01 KIT Tribal Courthouse/21014.01 KIT Tribal Courthouse R20.rvt



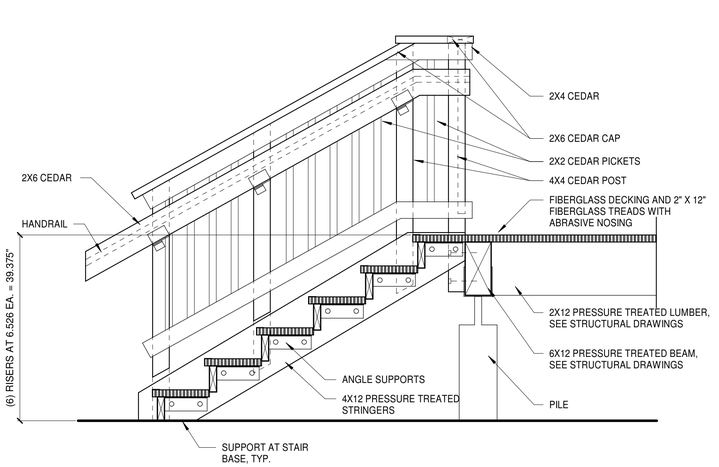
C1 / A503 TYP. DECK GUARDRAIL
3/4" = 1'-0"



A1 / A503 SOUTH STAIR SECTION
3/4" = 1'-0"



A2 / A503 NORTH STAIR SECTION
3/4" = 1'-0"



A3 / A503 WEST STAIR SECTION
3/4" = 1'-0"

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A503

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ROOM FINISH SCHEDULE1

ROOM NUMBER	ROOM NAME	FLOOR			BASE			WALLS												CEILING		Comments
								NORTH			EAST			SOUTH			WEST					
		MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	
001	STORAGE	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
002	IT	F4	FF	SV1	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
003	MECHANICAL	F4	FF	SV1	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
004	RESTROOM	F4	FF	SV1	B1	FF	RB1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	C1	P3	
005	MECHANICAL VENTILATION ROOM	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
100	WAITING AREA	F4	FF	SV1	B1	FF	RB1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	C1	P3	PHENOLIC LOCKERS
101	HALL	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
102	UA RESTROOM	F4	FF	SV1	B1	FF	RB1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	C1	P3	
103	OFFICE NO.1	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT2	C1	P3	
104	OFFICE NO.2	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	C1	P3	
105	OFFICE NO.3	F3	FF	CP2	B1	FF	RB1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
107	COURT CLERK	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	C1	P3	
108	HALL	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
108A	PUBLIC RESTROOM	F4	FF	SV1	B1	FF	RB1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	C1	P3	
108B	ADA PUBLIC RESTROOM	F4	FF	SV1	B1	FF	RB1	W1/W2	PT	PT1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	C1	P3	
109	HALL	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
109A	PUBLIC RESTROOM	F4	FF	SV1	B1	FF	RB1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	C1	P3	
109B	JANITOR	F4	FF	SV1	B1	FF	RB1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	W1/W2	PT/FF	PT1/WP1	C1	P3	
110	HALL	F2/F3	FF	CP1/CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
111	CIRCLE ROOM NO.1	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT2	C1	P3	
112	CIRCLE ROOM NO.2	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT2	C1	P3	
113	FOYER	F4	FF	SV1	B1	FF	RB1	W2	FF	WP1	W2	FF	WP1	W2	FF	WP1	W2	FF	WP1	C1	P3	
114	STAIR	F1/F2	FF	RB1/CP1	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
115	COURT ROOM NO.1	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	C1	P3	
116	COURT ROOM NO.2	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	C1	P3	
117	OFFICE NO.9	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	C1	P3	
118	BREAK/COPY ROOM	F4	FF	SV1	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT2	C1	P3	
119	HALL	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
119A	OFFICE NO.5	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	C1	P3	
120	OFFICE NO.6	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	C1	P3	
121	OFFICE NO.7	F3	FF	CP2	B1	FF	RB1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	W1	PT	PT1	C1	P3	
122	OFFICE NO.8	F3	FF	CP2	B1	FF	RB1	W1	PT	PT1	W1	PT	PT2	W1	PT	PT1	W1	PT	PT1	C1	P3	

ROOM FINISH LEGEND

FLOOR MATERIALS

F1	RUBBER STAIR TREADS
F2	WALK OFF MAT
F3	CARPET
F4	SHEET VINYL

FLOOR FINISHES

S	SEALER
FF	FACTORY FINISH

WALL MATERIALS

W1	GYPSUM WALL BOARD
W2	RIGID SHEET PANEL +4'-0"

WALL FINISHES

PT	PAINT
FF	FACTORY FINISH

PHENOLIC LOCKERS

FORMICA 'NATURAL MAPLE'

FLOOR COLORS

CP1	SHAW CONTRACT WELCOME II 'STERLING'
CP2	SHAW CONTRACT CANOPY COLLECTION GROUND 'SHADE'
SV1	SHAW CONTRACT ABIDE & INHABIT 'ANTIQUE OAK' 06150
RB1	FLEXCO 093 'GRAPHITE'

WALL COLORS

PT1	BEHR MARQUEE CAMEO WHITE 'MQ3-32'
PT2	BEHR MARQUEE JEAN JACKET BLUE 'S510-4'
WP1	INPRO 0154 'CLAM SHELL'

DOOR, FRAME AND WOOD TRIM FINISH

MATCH FORMICA 'NATURAL MAPLE'

BASE MATERIALS

B1	4" RUBBER BASE

BASE FINISH

FF	FACTORY FINISH

CEILING MATERIALS

C1	GYPSUM BOARD

CEILING FINISHES

PT	PAINT

BASE COLORS

RB1	FLEXCO 093 'GRAPHITE'

CEILING MATERIALS

PT-3	BEHR MARQUEE CAMEO WHITE 'MQ3-32'

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Sheet No.
A601

BIM 360://21014.01 KIT Tribal Courthouse/21014.01 KIT Tribal Courthouse R20.rvt

Plot Date Time: 12/17/2021 8:42:18 AM

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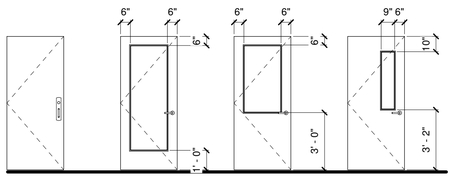
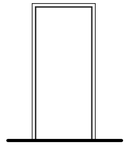
DOOR SCHEDULE

NO.	SIZE WIDTH	SIZE HEIGHT	TYPE	DOOR MATERIAL	DOOR FINISH	DOOR GLASS	DOOR COLOR	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	HARDWARE GROUP	HEAD	JAMB	THRESHOLD	COMMENTS
001-1	3' - 0"	2' - 0"	F	M	PT	--		1	HM	PT	13	-	-	A3/A502	
001-2	3' - 0"	7' - 0"	NL	M	PT	GL-2		1	IHM	PT	01	D3/A502	C3/A502	A3/A502	
002-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	10	B4/A701	A4/A701		LOUVERED DOOR
003-1	3' - 0"	7' - 0"	F	M	PT	--		1	WD	PT	10	B4/A701	A4/A701		
004-1	3' - 0"	7' - 0"	F	M	PT	--		1	WD	PT	09	B4/A701	A4/A701		
005-1	3' - 0"	7' - 0"	F	M	PT	--		1	WD	PT	10	B4/A701	A4/A701		
005-2	3' - 0"	2' - 0"	F	M	PT	--		1	HM	PT	13	-	-	A3/A502	
100-1	3' - 0"	7' - 0"	HL	M	PT	GL-2		1	IHM	PT	01	D3/A502	C3/A502	A3/A502	SIGNAGE: VISITOR ENTRANCE
100-5	2' - 8"	0"	74												
100-7	2' - 8"	0"	74												
100-8	2' - 8"	0"	74												
100-9	2' - 8"	0"	74												
101-1	3' - 0"	7' - 0"	HL	WD	PT	GL-1		1	WD	PT	04	B4/A701	A4/A701		
102-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	08	B4/A701	A4/A701		
103-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	06	B4/A701	A4/A701		
104-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	06	B4/A701	A4/A701		
105-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	06	B4/A701	A4/A701		
107-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	07	B4/A701	A4/A701		
108-1	3' - 0"	7' - 0"	NL	M	PT	GL-2		1	IHM	PT	02	D3/A502	C3/A502	A3/A502	
108-2	3' - 0"	7' - 0"	HL	WD	PT	GL-1		1	WD	PT	03	B4/A701	A4/A701		
108A-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	08	B4/A701	A4/A701		
108B-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	08	B4/A701	A4/A701		
109A-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	08	B4/A701	A4/A701		
109B-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	10	B4/A701	A4/A701		
110-1	3' - 0"	7' - 0"	HL	WD	PT	GL-1		1	WD	PT	03	B4/A701	A4/A701		
110-2	3' - 0"	7' - 0"	HL	M	PT	GL-2		1	IHM	PT	01	D3/A502	C3/A502	A3/A502	SIGNAGE: EMPLOYEE ENTRANCE
111-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	05	B4/A701	A4/A701		
111-2	3' - 0"	7' - 0"	NL	M	PT	GL-2		1	IHM	PT	02	D3/A502	C3/A502	A3/A502	
112-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	05	B4/A701	A4/A701		
112-2	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	05	B4/A701	A4/A701		
115-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	04	B4/A701	A4/A701		
115-2	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	05	B4/A701	A4/A701		
115-3	3' - 0"	7' - 0"	F	M	PT	--		1	IHM	PT	02	D3/A502	C3/A502	A3/A502	
116-1	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	05	B4/A701	A4/A701		
116-2	3' - 0"	7' - 0"	F	WD	PT	--		1	WD	PT	04	B4/A701	A4/A701		
116-3	3' - 0"	7' - 0"	F	M	PT	--		1	IHM	PT	02	D3/A502	C3/A502	A3/A502	
117-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	07	B4/A701	A4/A701		
118-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	12	B4/A701	A4/A701		
119A-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	07	B4/A701	A4/A701		
120-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	07	B4/A701	A4/A701		
121-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	07	B4/A701	A4/A701		
122-1	3' - 0"	7' - 0"	FL	WD	PT	GL-1		1	WD	PT	07	B4/A701	A4/A701		

DOOR TYPES

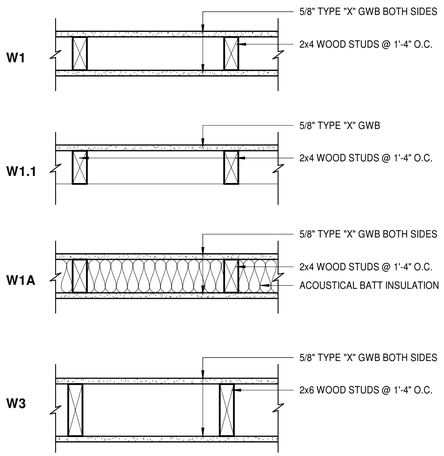


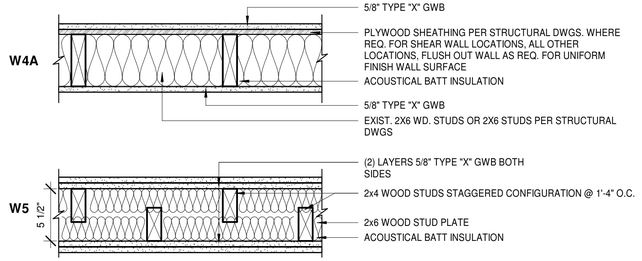
FRAME TYPES



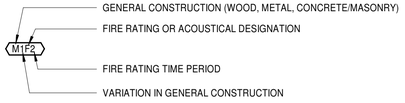
PARTITION TYPES

WOOD STUD WALLS





PARTITION TYPES LEGEND AND NOTES



FULL HEIGHT STUD PARTITIONS ARE INDICATED WITH THE FOLLOWING DESIGNATIONS AFTER THE PARTITION TYPE DESIGNATION (EG.: M2A OR W6F2)

F1 FIRE RATING (ONE HOUR PER IBC TABLE 720.1(2))

F2 FIRE RATING (TWO-HOUR PER IBC TABLE 720.1(2)

A ACOUSTICAL SEPARATION WALL (ADD 3 1/2" ACOUSTICAL BATT INSULATION)

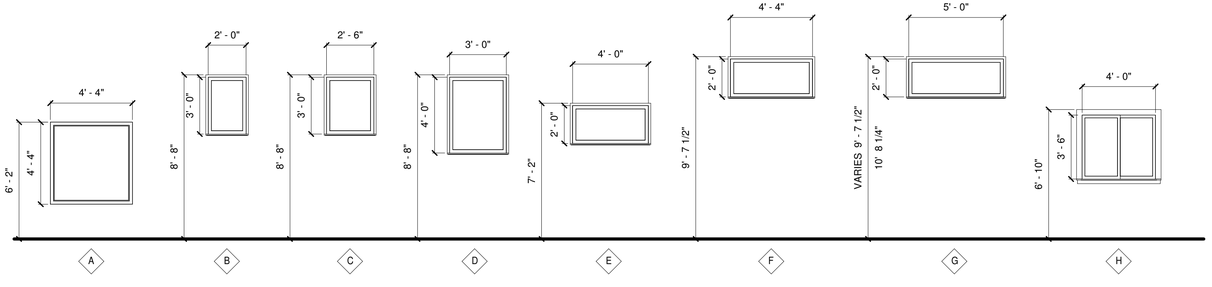
HM HOLLOW METAL FRAME

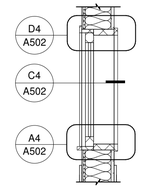
M METAL

1. FOR ASYMETRICAL PARTITIONS, THE LOCATION OF THE PARTITION TYPE SYMBOL ON THIS SHEET CORRESPONDS TO THE SAME ORIENTAION AS THE FLOOR PLAN
2. SEE FLOOR PLAN FOR PLUMBING WALL DIMENSIONS NOT SHOWN.
3. IF STRUCTURAL USE PANELS (S.U.P.) ARE INDICATED, REFER TO STRUCTURAL DRAWINGS FOR THICKNESS, GRADE, AND SPAN RATING.

GL-1 GLASS TYPE 1

WINDOW TYPES





D4/A502 TYPICAL WINDOW HEAD DETAIL REFERENCE

C4/A502 TYPICAL WINDOW JAMB DETAIL REFERENCE

A4/A502 TYPICAL WINDOW SILL DETAIL REFERENCE

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Revisions

No.	Description	Date

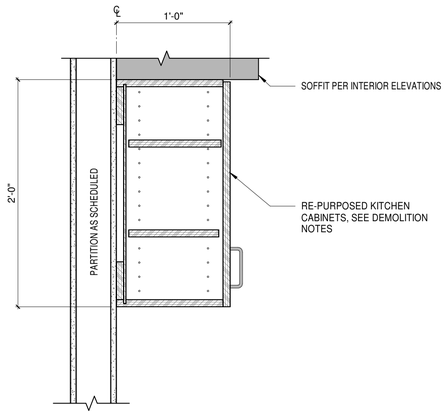
Drawn by Author	Date 12/17/2021
Checked Checker	Job No. 21014.01

Sheet Contents
DOOR SCHEDULE

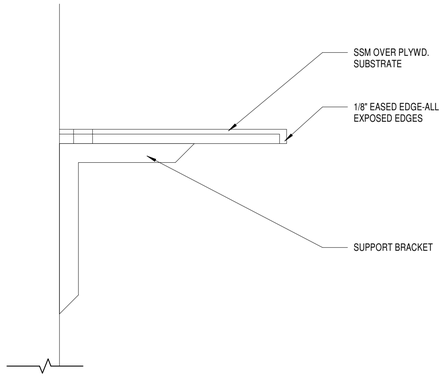
Sheet No.
A602

Plot Date Time: 12/17/2021 8:42:18 AM

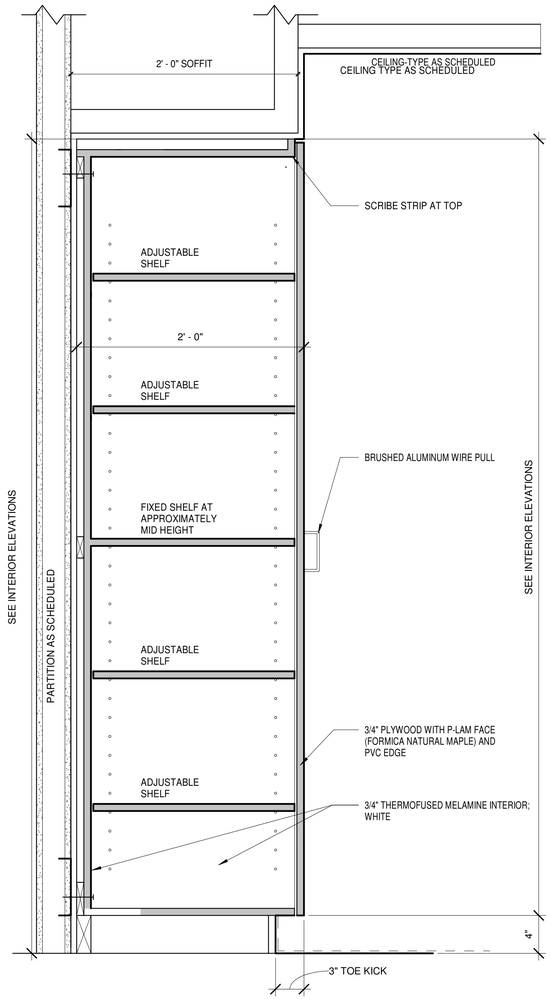
BIM 360://21014.01 KIT Tribal Courthouse/21014.01 KIT Tribal Courthouse R20.rvt



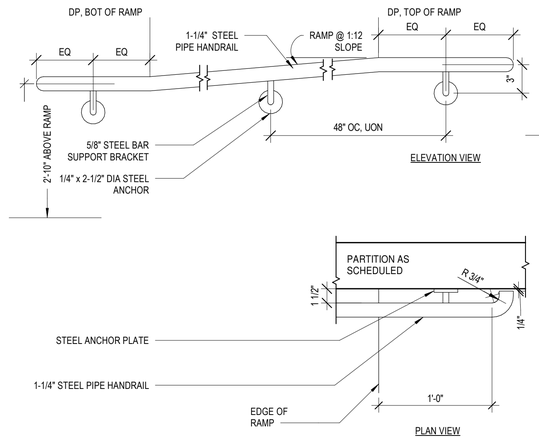
C1 A701 CASEWORK DETAILS @ UPPERS
1 1/2" = 1'-0"



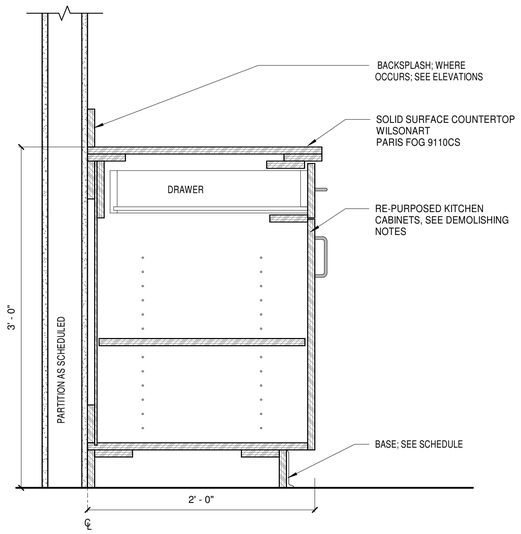
C2 A701 WALL MOUNTED SHELF
1 1/2" = 1'-0"



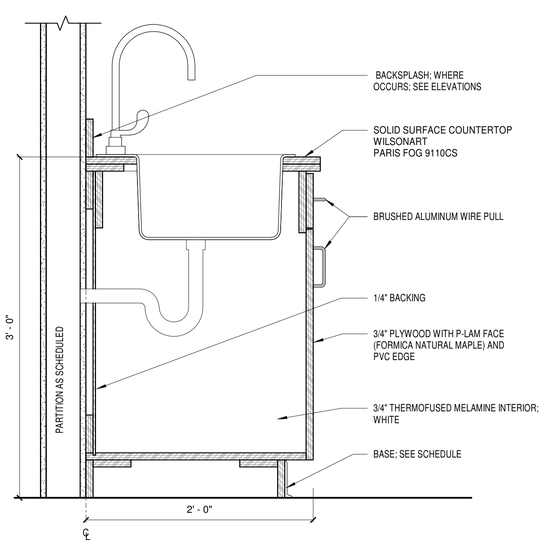
A3 A701 FULL HEIGHT CABINETS
1 1/2" = 1'-0"



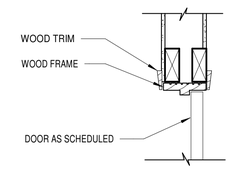
C4 A701 INT. RAIL DETAIL
1 1/2" = 1'-0"



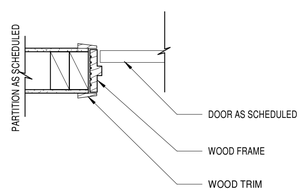
A1 A701 CABINET W/ DOR & DRAWER
1 1/2" = 1'-0"



A2 A701 CASEWORK DETAILS @ SINK
1 1/2" = 1'-0"



B4 A701 INT. DOOR HEAD
1 1/2" = 1'-0"



A4 A701 INT. DOOR JAMB
1 1/2" = 1'-0"

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Revisions

No.	Description	Date

Drawn by Author	Date 12/17/2021
Checked Checker	Job No. 21014.01

Sheet Contents
INTERIOR DETAILS

Sheet No.
A701

Plot Date Time: 12/17/2021 8:42:18 AM

STRUCTURAL - GENERAL NOTES

GENERAL REQUIREMENTS

GOVERNING CODE: The design and construction of this project is governed by the **"International Building Code (IBC)", 2012 Edition**, hereafter referred to as the IBC, as adopted and modified by the **City of Kenai, AK** understood to be the Authority Having Jurisdiction (AHJ).

REFERENCE STANDARDS: Refer to Chapter 35 of 2012 IBC. Where other Standards are noted in the drawings, use the latest edition of the standard unless a specific date is indicated. Reference to a specific section in a code does not relieve the contractor from compliance with the entire standard.

DEFINITIONS: The following definitions cover the meanings of certain terms used in these notes:

"**Architect/Engineer**" – The Architect of Record and the Structural Engineer of Record.

- "**Structural Engineer of Record" (SER)** – The structural engineer who is licensed to stamp & sign the structural documents for the project. The SER is responsible for the design of the Primary Structural System.
- "**Submit for review**" - Submit to the Architect/Engineer for review prior to fabrication or construction.
- "**Per Plan**" – Indicates references to the structural plans, elevations and structural general notes.
- **"Specialty Structural Engineer" (SSE) –** A professional engineer (PE or SE), licensed in the State where the project is located, (typically not the SER), who performs specialty structural engineering services for selected specialty-engineered elements identified in the Contract Documents, and who has experience and training in the Specialty. Documents stamped and signed by the SSE shall be completed by or under the direct supervision of the SSE.
- **"Bidder-designed" –** Components of the structure that require the general contractor, subcontractor, or supplier who is responsible for the design, fabrication and installation of specialty-engineered elements identified in the Contract Documents to retain the services of an SSE. Submittals of "Bidder-designed" elements shall be stamped and signed by the SSE.

OTHER DRAWINGS: Refer to the architectural, mechanical, electrical, civil and plumbing drawings for additional information including but not limited to: dimensions, elevations, slopes, door and window openings, non-bearing walls, stairs, finishes, drains, waterproofing, railings, mechanical unit locations, and other non-structural items.

STRUCTURAL DETAILS: The structural drawings are intended to show the general character and extent of the project and are not intended to show all details of the work. Use entire detail sheets and specific details referenced in the plans as "typical" wherever they apply. Similarly, use details on entire sheets with "typical" in the name wherever they apply.

STRUCTURAL RESPONSIBILITIES: The structural engineer (SER) is responsible for the strength and stability of the primary structure in its completed form.

COORDINATION: The Contractor is responsible for coordinating details and accuracy of the work; for confirming and correlating all quantities and dimensions; for selecting fabrication processes; for techniques of assembly; and for performing work in a safe and secure manner.

MEANS, METHODS and SAFETY REQUIREMENTS: The contractor is responsible for the means and methods of construction and all job related safety standards such as OSHA and DOSH (Department of Occupational Safety and Health). The contractor is responsible for means and methods of construction related to the intermediate structural conditions (i.e. movement of the structure due to moisture and thermal effects; construction sequence; temporary bracing, etc).

TEMPORARY SHORING, BRACING: The contractor is responsible for the strength and stability of the structure during construction and shall provide temporary shoring, bracing and other elements required to maintain stability until the structure is complete. It is the contractor's responsibility to be familiar with the work required in the construction documents and the requirements for executing it properly.

CONSTRUCTION LOADS: Loads on the structure during construction shall not exceed the design loads as noted in DESIGN CRITERIA & LOADS below or the capacity of partially completed construction as determined by the Contractor's SSE for Bracing/Shoring.

CHANGES IN LOADING: The contractor has the responsibility to notify the SER of any architectural, mechanical, electrical, or plumbing load imposed onto the structure that differs from, or that is not documented on the original Contract Documents (architectural / structural / mechanical / electrical or plumbing drawings). Provide documentation of location, load, size and anchorage of all undocumented loads in excess of 400 pounds. Provide marked-up structural plan indicating locations of any new equipment or loads. Submit plans to the Architect/Engineer for review prior to installation.

NOTE PRIORITIES: Plan and detail notes and specific loading data provided on individual plans and detail drawings supplements information in the Structural General Notes.

DISCREPANCIES: In case of discrepancies between the General Notes, Specifications, Plans/Details or Reference Standards, the Architect/Engineer shall determine which shall govern. Discrepancies shall be brought to the attention of the Architect/Engineer before proceeding with the work. Should any discrepancy be found in the Contract Documents, the Contractor will be deemed to have included in the price the most expensive way of completing the work, unless prior to the submission of the price, the Contractor asks for a decision from the Architect as to which shall govern. Accordingly, any conflict in or between the Contract Documents shall not be a basis for adjustment in the Contract Price.

SITE VERIFICATION: The contractor shall verify all dimensions and conditions at the site. Conflicts between the drawings and actual site conditions shall be brought to the attention of the Architect/Engineer before proceeding with the work.

ADJACENT UTILITIES: The contractor shall determine the location of all adjacent underground utilities prior to earthwork, foundations, shoring, and excavation. Any utility information shown on the drawings and details is approximate and not necessarily complete.

ALTERNATES: Alternate products of similar strength, nature and form for specified items may be submitted with adequate technical documentation (proper test report, etc.) to the Architect/Engineer for review. Alternate materials that are submitted without adequate technical documentation or that significantly deviate from the design intent of materials specified may be returned without review. Alternates that require substantial effort to review will not be reviewed unless authorized by the Owner.

DESIGN CRITERIA AND LOADS

OCCUPANCY:	Risk Category of Building per 2012 IBC Table 1604.5 =	**II**

WIND DESIGN:	**MAIN WIND FORCE RESISTING SYSTEM**	
	Ultimate Design Wind Speed, V_{ULT} (MPH)	**134**
	Exposure Category	**C**
	Internal Pressure Coefficient **Cpi =**	**+/- 0.18**
	Topographic Factor **Kzt =**	**1.0**
	Wind Analysis procedure used:	**Directional**

SEISMIC DESIGN:	**Seismic Design Category: SDC =**	**D**
	Basic Structural System	**Bearing Wall**
	Seismic Force Resisting System	**Light-Framed Wood Sheathed Shear Walls**
	Response Modification Factor: **R =**	**6.5**
	System Over strength Factor **Omega =**	**3**
	Deflection Amplification Factor **Cd =**	**4**
	Site Classification per IBC 1613.3.2 & ASCE 7-10, Ch. 20 **Site Class =**	**D**
	Seismic Importance Factor per ASCE 7-10 Table 1.5-2 **Ie =**	**1.0**
	Spectral Response Acceleration (Short Period) **S_s =**	**1.500**
	Spectral Response Acceleration (1-Second Period) **S_1 =**	**0.600**
	Spectral Design Response Coefficient (Short Period) **S_{DS} =**	**1.000 g**
	Spectral Design Response Coefficient (1-Second Period) **S_{DI} =**	**0.600 g**
	Seismic response coefficient(s) **Cs =**	**0.154**
	Seismic Analysis procedure used:	**Equivalent Lateral Force (ELF)**

SNOW LOAD:	Flat Roof Snow Load, (PSF)	p_f =	**49**
	Snow Drift Loading required by Authority Having Jurisdiction?		**Yes**
	Snow Load Importance Factor	**I_s =**	**1.0** (1)
	Ground Snow Load, (PSF)	**p_g =**	**70**
	Snow Exposure Factor	**C_e =**	**B**
	Thermal Factor	**C_t =**	**1.0**

1) Snow Load Importance Factor per ASCE 7-10 Table 1.5-2.

DESIGN LIVE LOADS	**AREA**	**LIVE LOADS (PSF) UNO**	**REMARKS & FOOTNOTES**
	Handrails & Pedestrian Guardrails	50 PLF or 200 LB	(1)
	Balconies & Decks	----	Same as Occupancy served
	Offices	50 + 15	2000 lbs (2)

(1) Top rail shall be designed to resist 50 PLF line load or 200 lb point load applied in any direction at any point. Intermediate rails (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 LB on an area not to exceed 1 ft square. These three loads are to be considered separately with worst case used for design.
(2) Floors for Business Group B (Offices) Occupancy shall be designed with a basic floor Live Load plus an additional 15 PSF (minimum) live loading for moveable partitions.

DESIGN DEAD LOADS	BIDDER DESIGN	DEAD LOADS (PSF) UNO	REMARKS & FOOTNOTES
	Roof Dead Load, Total Top Chord Bottom Chord	**[15]** PSF **[10]** PSF **[5]** PSF	For Pre-Fabricated Wood Truss design

SUBMITTALS

SUBMIT FOR REVIEW: SUBMITTALS of shop drawings and product data are required for items noted in the individual materials sections and for *bidder designed* elements.

SUBMITTAL REVIEW PERIOD: Submittals shall be made in time to provide a minimum of TWO WEEKS or 10 WORKING DAYS for review by the Architect/Engineer prior to the onset of fabrication.

GENERAL CONTRACTOR'S PRIOR REVIEW: Prior to submission to the Architect/Engineer, the Contractor shall review the submittal for completeness. Dimensions and quantities are not reviewed by the SER, and therefore, must be verified by the General Contractor. Contractor shall provide any necessary dimensional details requested by the Detailer and provide the Contractor's review stamp and signature before forwarding to the Architect/Engineer and with a Submittal Cover Sheet defining the submittal specification with date of the submittal. Architect will provide a Submittal Cover Sheet.

SHOP DRAWING REVIEW: Once the contractor has completed his review, the SER will review the submittal for general conformance with the design concept and the contract documents of the building and will stamp the submittal accordingly. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications, nor departures there from. The SER will return submittals in the form they are submitted in (either hard copy or electronic). For hard copy submittals, the contractor is responsible for submitting the required number of copies to the SER for review. Submittals can be returned directly to the contractor but must include the owner for tracking purposes.

SHOP DRAWING DEVIATIONS: When shop drawings (component design drawings) differ from or add to the requirements of the structural drawings they shall be designed and stamped by the responsible SSE. All submittals requiring to be resubmitted shall be labeled revised as 1, 2, or 3 until approved by the architect.

DEFERRED SUBMITTALS

BIDDER-DESIGNED ELEMENTS
Submit "Bidder-Designed" deferred submittals to the Architect and SER for review. The deferred submittals shall also be submitted to the city for approval, if required by the city.

Design of prefabricated, "bidder designed", manufactured, pre-engineered, or other fabricated products shall be comply with the following requirements:

1) Design considers tributary dead, live, wind and earthquake loads in combinations required by IBC.
2) Design within the Deflection Limits noted herein and as specified or referenced in the IBC.
3) Design shall conform to the specifications and reference standards of the governing code.
4) Submittal shall include:
   a. Calculations prepared, stamped and signed by the SSE demonstrating code conformance.
   b. Engineered component design drawings are prepared, stamped and signed by the SSE.
   c. Product data, technical information and manufacturer's written requirements and Agency approvals as applicable.
   d. SSE may submit to the Architect/Engineer, a request to utilize relevant alternate design criteria of similar nature and generally equivalency which is recognized by the Code and acceptable to the Authority Having Jurisdiction. Submit adequate documentation of design.

DEFLECTION LIMITS FOR SSE / BIDDER DESIGNED ELEMENTS:	**VERTICAL**	**LIMIT**
	Roof Members, Dead + Live or Snow or Wind, Total Load (TL) Deflection	L / 240, where (L is span length, inches)
	Roof, Live or Snow or Wind Load (RLL)	L / 360

GENERAL CONTRACTOR'S PRIOR REVIEW: Once the contractor has completed his review of the SSE component drawings, the SER will review the submittal for general conformance with the design of the building and will stamp the submittal accordingly. Review of the Specialty Structural Engineer's (SSE) shop drawings (component design drawings) is for compliance with design criteria and compatibility with the design of the primary structure and does not relieve the SSE of responsibility for that design. All necessary bracing, ties, anchorage, proprietary products shall be furnished and installed per manufacturer's instructions or the SSE's design drawings and calculations. These elements include but are not limited to:

- Prefabricated Wood Roof Trusses
- Helical Piles
- Framing at Drop Ceiling per S101A

INSPECTIONS, QUALITY ASSURANCE VERIFICATIONS AND TEST REQUIREMENTS

INSPECTIONS: Foundations, footings, under slab systems and framing are subject to inspection by the Building Official in accordance with IBC 110.3. Contractor shall coordinate all required inspections with the Building Official.

SPECIAL INSPECTIONS, VERIFICATIONS and TESTS: Special Inspections, Verifications and Testing shall be done in accordance with IBC Chapter 17 and the STATEMENT OF SPECIAL INSPECTIONS herein per IBC Sections 1704 and 1705, including 1705.11 and 1705.12 for seismic resistance for projects in Seismic Design Categories C, D, E and F, including 1705.10 for high wind regions as applicable.

SPECIAL INSPECTION AGENCY and SPECIAL INSPECTORS: Owner will be responsible to provide Special Inspection per IBC 1703. Special Inspectors shall be qualified persons per IBC 1704.2.1.

STATEMENT OF SPECIAL INSPECTIONS. Special Inspections and Testing per IBC Sections 1704 and 1705 are required for the following:

FABRICATION SHOP INSPECTION: Where off-site Fabrication of gravity LOAD BEARING MEMBERS & ASSEMBLIES is performed, Special Inspector shall verify that the fabricator complies with IBC 1704.2.5

SOILS & FOUNDATION CONSTRUCTION per IBC Section 1705.6

- **Periodic** inspection of soils earthwork per Table 1705.6 is required for:
  - Footing soil bearing surfaces prior to placing any reinforcing steel
  - Excavation depth and bearing layer prior to placing any reinforcing steel.
  - Compacted fill material classification.
  - Subgrade preparation prior to filling.
- **Continuous** inspection per Table(s) 1705.6**, 1705.7 and 1705.8** required for:
  - Filling operations to satisfy requirements of IBC Table 1705.6 and the geotechnical report listed under SOILS & FOUNDATIONS section.
  - Compacted fill density testing of each lift, proper lift thickness and material classification.
  - Installation of Helical Pile Foundations per IBC Section 1705.9.

CONCRETE CONSTRUCTION per IBC Section 1705.3 and Table 1705.3 including:

- **Periodic** inspection required for:
  - Size & placement of all reinforcing steel prior to the pour.
  - Placement clearances around reinforcing steel at embedded conduit.
  - Placing & size of cast-in-place bolts and embedded fabrications prior to the pour.
  - Shape, location & dimensions of members formed.
  - Use of the required design concrete mix.
  - Maintenance of specified curing temperature and techniques.
- **Continuous** inspection required during the:
  - Placing of reinforced concrete for proper application techniques.
  - Placing of concrete around cast-in-place bolts and embeds.
  - Sampling of fresh concrete.
  - Determinations of slump, air content and temperature.
  - Grouting operation of post-installed bolts or rebar dowels.

STRUCTURAL MASONRY per IBC Section 1705.4 and 1705.12

LEVEL B - MASONRY CONSTRUCTION per TMS 402-11/ACI 530-11/ASCE 6-11 Section 1.19.2:

- **Periodic** inspection required for:
  - Size, grade, placement and type of reinforcing steel and connectors
  - Proportions of site-prepared mortar
  - Construction of mortar joints
  - Cleanliness of grout space prior to grouting
  - Cleanout size and spacing if cleanouts are required for high-lift grouting
  - Size and location of structural elements
  - Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction
  - Protection of masonry during cold weather (temp. below 40 degrees F)
  - Protection of masonry during hot weather (temp. above 90 degrees F).
  - Compliance with required inspection provisions of the construction documents and the approved submittals.
- **Continuous** inspection required during/for the:
  - Continuous inspection of welding of reinforcing bars.
  - Continuous inspection of all grout placement.

WOOD CONSTRUCTION per IBC Section 1705.5, 1705.10.1, & 1705.11.2:

- **Periodic** inspection required for verification of:
  - Shear Walls: Anchor Bolts, Hold-downs (HD) and Continuous Rod Tie-Down Systems (TDS) including squash blocks, LPT shear connectors, strap connectors, boundary edge nailing, plate nailing and panel edge shear nailing for size & spacing**.**
  - Diaphragms: blocking, strap connections, boundary edge and panel shear nailing size & spacing**.**
  - Moisture content of wood studs, plates, beams, decking, and joists.
  - Proper bottom plates sizes (2x and 3x) and plate washers.
  - Roof truss 'hurricane' clips.

POST-INSTALLED ANCHORS TO CONCRETE AND MASONRY**:** shall comply with IBC Section 1703. Inspections shall be in accordance with the requirements set forth in the approved ICC Evaluation Report and as indicated by the design requirements specified on the drawings. Refer to the POST INSTALLED ANCHORS section of these notes for anchors that are the basis of the design. Special inspector shall verify anchors are as specified in the POST INSTALLED ANCHORS section of these notes or as otherwise specified on the drawings. Substitutions require approval by the SER and require substantiating calculations and current 2012 IBC recognized ICC Evaluation Services (ES) Report. Special Inspector shall document in their Special Inspection Report compliance with each of the elements required within the applicable ICC Evaluation Services (ES) Report.

INSPECTION SUBMITTALS: Special inspection reports shall be provided on a weekly basis. Final special inspection reports will be required by each special inspection firm per IBC 1704.2.4. Submit copies of all inspection reports to the Architect/Engineer and the Authority Having Jurisdiction for review.

CONTRACTOR RESPONSIBILITY: Prior to issuance of the building permit, the Contractor is required to provide the Authority Having Jurisdiction a signed, written acknowledgement of the Contractor's responsibilities associated with the above Statement of Special Inspections addressing the requirements listed in IBC Section 1704.4. Contractor is referred to IBC Sections 1705.11.5 and 1705.11.6 for architectural and MEP building systems that may be subject to additional inspections (based on the building's designated Seismic Design Category listed in the CRITERIA), including anchorage of HVAC ductwork containing hazardous materials, piping systems and mechanical units containing flammable, combustible or highly toxic materials, electrical equipment used for emergency or standby power, exterior wall panels and suspended ceiling systems.

PREFABRICATED CONSTRUCTION: All prefabricated construction shall conform to IBC Section 1703.

DRAWING LEGEND

MARK	DESCRIPTION	MARK	DESCRIPTION
F2.0	FOOTING SYMBOL (REFER TO SPREAD FOOTING SCHEDULE)		INDICATES WIDE FLANGE COLUMN
1P	PILE CAP SYMBOL (REFER TO PILE CAP SCHEDULE)		INDICATES HOLLOW STRUCTURAL SECTION (HSS) COLUMN OR TUBE STEEL (TS) COLUMN
1	TILT-UP/PRECAST CONCRETE WALL CONNECTION SYMBOL (REFER TO CONNECTION DETAIL)		INDICATES HOLLOW STRUCTURAL SECTION (HSS) COLUMN OR STEEL PIPE COLUMN
2W4	SHEAR WALL SYMBOL (REFER TO SHEAR WALL SCHEDULE)		INDICATES WOOD POST
0 RFI 00	REVISION TRIANGLE		INDICATES BUNDLED STUDS
1	TILT-UP/PRECAST CONCRETE WALL PANEL NUMBER (REFER TO TILT-UP/ PRECAST CONCRETE WALL ELEVATIONS)		INDICATES CONCRETE COLUMN
8"	CONTINUITY PLATE LENGTH (REFER TO TYPICAL DETAIL)		INDICATES PRECAST CONCRETE COLUMN
1	ROOF/FLOOR DIAPHRAGM NAILING SYMBOL (REFER TO DIAPHRAGM NAILING SCHEDULE)		INDICATES MOMENT FRAME CONNECTION
T/FTG = X'-X"	ELEVATION SYMBOL (T/ REFERS TO COMPONENT THAT THE ELEVATION REFERENCES)		INDICATES CANTILEVER CONNECTION
3	STUD BUBBLE (INDICATES NUMBER OF STUDS REQUIRED IF EXCEEDS NUMBER SPECIFIED IN PLAN NOTE)		INDICATES DRAG CONNECTION
S	INDICATES STEP IN FOOTING (REFER TO TYPICAL STEP IN FOOTING DETAIL)		INDICATES A LEDGER
X SX.X	DETAILS OR SECTION CUT (DETAIL NUMBER/SHEET NUMBER)		INDICATES WOOD OR STEEL STUD BEARING WALL LINE PER KEY ON SHEET
00 S0.0	DETAILS OR SECTION CUT IN PLAN VIEW (DETAIL NUMBER/SHEET NUMBER)	OR	INDICATES WOOD OR STEEL STUD SHEAR WALL LINE AND HOLD-DOWNS PER KEY ON SHEET
XX/SXX.XX	INDICATES LOCATION OF CONCRETE WALLS, SHEAR WALLS OR BRACED FRAME ELEVATIONS		INDICATES MASONRY/CMU WALL
	STRUCTURAL EXTENT SYMBOL SINGLE ARROW - END OF EXTENT DOUBLE ARROW - CONTINUOUS EXTENT ALONG THE ELEMENT LINE UNTIL THE ELEMENT IS INTERRUPTED		INDICATES CONCRETE/TILT-UP CONCRETE WALL
			INDICATES BEARING WALL BELOW
	INDICATES DIRECTION OF DECK SPAN		INDICATES EXISTING WALL

ABBREVIATIONS

L	Angle	EXT	Exterior	PJP	Partial Joint Penetration
AB	Anchor Bolt	FB	Factory-Built	PREFAB	Prefabricated
ADDL	Additional	FD	Floor Drain	PSF	Pounds per Square Foot
ADH	Adhesive	FDN	Foundation	PSI	Pounds Per Square Inch
ALT	Alternate	FIN	Finish	PSL	Parallel Strand Lumber
ARCH	Architectural	FLR	Floor	P-T	Post-Tensioned
B or BOT	Bottom	FRP	Fiberglass Reinforced Plastic	PT	Pressure Treated
B/	Bottom Of	FRT	Fire Retardant Treated	R	Radius
BLDG	Building	FTG	Footing	RD	Roof Drain
BLKG	Blocking	F/	Face of	REF	Refer/Reference
BMU	Brick Masonry Unit	GA	Gage	REINF	Reinforcing
BP	Baseplate	GALV	Galvanized	REQD	Required
BRBF	Buckling Restrained Braced Frame	GEOTECH	Geotechnical	RET	Retaining
		GL	Glue Laminated Timber	SB	Site-Built
BRG	Bearing	GWB	Gypsum Wall Board	SCBF	Special Concentric Braced Frame
BTWN	Between	HDR	Header		
C	Camber	HF	Hem-Fir	SCHED	Schedule
CB	Castellated Beam	HGR	Hanger	SER	Structural Engineer of Record
C'BORE	Counterbore	HD	Hold-down		
CL or ℄	Centerline	HORIZ	Horizontal	SFRS	Seismic Force-Resisting System
CLT	Cross-Laminated Timber	HP	High Point		
CIP	Cast in Place	HSS = TS	(Hollow Structural Section)	SHTHG	Sheathing
CJ	Construction or Control Joint	IBC	International Building Code	SIM	Similar
		ID	Inside Diameter	SLBB	Short Leg Back-to-Back
CJP	Complete Joint Penetration	IE	Invert Elevation	SMF	Special Moment Frame
		IF	Inside Face	SOG	Slab on Grade
CLR	Clear	INT	Interior	SP	Southern Pine
CLG	Ceiling	k	Kips	SPEC	Specification
CMU	Concrete Masonry Unit	KSF	Kips Per Square Foot	SQ	Square
COL	Column	LF	Lineal Foot	SR	Studrail
CONC	Concrete	LL	Live Load	SF	Square Foot
CONN	Connection	LLBB	Long Leg Back-to-Back	SST	Stainless Steel
CONST	Construction	LLH	Long Leg Horizontal	STAGG	Stagger/Staggered
CONT	Continuous	LLV	Long Leg Vertical	STD	Standard
C'SINK	Countersink	LP	Low Point	STIFF	Stiffener
CTRD	Centered	LONGIT	Longitudinal	STL	Steel
DIA	Diameter	LSL	Laminated Strand Lumber	STRUCT	Structural
DB	Drop Beam	LVL	Laminated Veneer Lumber	SWWJ	Solid Web Wood Joist
DBA	Deformed Bar Anchor	MAS	Masonry	SYM	Symmetrical
DBL	Double	MAX	Maximum	T	Top
DEMO	Demolish	MECH	Mechanical	T/	Top Of
DEV	Development	MEZZ	Mezzanine	T&B	Top & Bottom
DF	Douglas Fir	MFR	Manufacturer	TC AX LD	Top Chord Axial Load
DIAG	Diagonal	MIN	Minimum	TCX	Top Chord Extension
DIST	Distributed	MISC	Miscellaneous	TDS	Tie Down System
DL	Dead Load	NIC	Not In Contract	T&G	Tongue & Groove
DN	Down	NLT	Nail-Laminated Timber	THKND	Thickened
DO	Ditto	NTS	Not To Scale	THRD	Threaded
DP	Depth/Deep	OC	On Center	THRU	Through
DWG	Drawing	OCBF	Ordinary Concentric Braced Frame	TRANSV	Transverse
(E)	Existing			TYP	Typical
EA	Each	OD	Outside Diameter	UNO	Unless Noted Otherwise
EF	Each Face	OF	Outside Face	URM	Unreinforced Masonry Unit
EL	Elevation	OPNG	Opening		
ELEC	Electrical	OPP	Opposite	VERT	Vertical
ELEV	Elevator	OWSJ	Open Web Steel Joist	W	Wide
EMBED	Embedment	OWWJ	Open Web Wood Joist	W/	With
EQ	Equal	PL	Plate	W/O	Without
EQUIP	Equipment	PAF	Powder Actuated Fastener	WHS	Welded Headed Stud
EW	Each Way	PC	Precast	WP	Working Point
EXP	Expansion	PERP	Perpendicular	WWF	Welded Wire Fabric
EXP JT	Expansion Joint	PLWD	Plywood	±	Plus or Minus

FOR PERMIT
These drawings are sufficiently complete for submission to the jurisdiction having authority for permit. The Contractor shall not use these drawings for construction until Contractor receives written approval for use in construction by the jurisdiction having authority and DCI Engineers.

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KENAITZE INDIAN TRIBE
TRIBAL COURTHOUSE
508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL GENERAL NOTES, LEGEND AND ABBREVIATIONS

Sheet No.
S001

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SOILS AND FOUNDATIONS

REFERENCE STANDARDS: Conform to IBC Chapter 18 "Soils and Foundations."

GEOTECHNICAL SUBGRADE INSPECTION: The Geotechnical Engineer shall inspect all sub-grades and prepared soil bearing surfaces, prior to placement of foundation reinforcing steel and concrete. Geotechnical Engineers shall provide a letter to the owner stating that soils are adequate to support the "Allowable Foundation Bearing Pressure(s)" shown below.
Assumed values shall be field verified by the Building Official or the Geotechnical Engineer prior to placing concrete.

DESIGN SOIL VALUES:
Allowable Foundation Bearing Pressure..... 1500 PSF – **Assumed**

FOUNDATIONS and FOOTINGS: Foundations shall bear on either competent native soil or compacted structural fill as per the geotechnical report. Exterior perimeter footings shall bear not less than **42** inches below finish grade, unless otherwise specified by the geotechnical engineer and/or the building official.

FOOTING DEPTH: Tops of footings shall be as shown on plans with vertical changes as indicated with steps in the footings; locations of steps shown as approximate and shall be coordinated with the civil grading plans to ensure that the exterior perimeter footings bear no less than 42 inches below finish grade, or as otherwise indicated by the geotechnical engineer or building official.

SLABS-ON-GRADE: All slabs-on-grade shall bear on compacted structural fill or competent native soil per the geotechnical report. All moisture sensitive slabs-on-grade or those subject to receive moisture sensitive coatings/covering shall be provided with an appropriate capillary break and vapor barrier/retardant over the subgrade prepared and installed as noted in the geotechnical report, barrier manufacturer's written recommendations and coordinated with the finishes specified by the Architect.

CAST-IN-PLACE CONCRETE

REFERENCE STANDARDS: Conform to:
(1) ACI 301-10 "Specifications for Structural Concrete"
(2) IBC Chapter 19 "Concrete"
(3) ACI 318-11/318R-11 "Building Code Requirements for Structural Concrete"
(4) ACI 117-10 "Specifications for Tolerances for Concrete Construction and Materials"

FIELD REFERENCE: The contractor shall keep a copy of ACI Field Reference manual, SP-15, "Standard Specifications for Structural Concrete (ACI 301) with Selected ACI and ASTM References."

CONCRETE MIXTURES: Conform to ACI 301 Section 4 "Concrete Mixtures" and IBC Section 1904.2.

MATERIALS: Conform to ACI 301 Section 4.2.1 "Materials" for requirements for cementitious materials, aggregates, mixing water and admixtures.

SUBMITTALS: Provide all submittals required by ACI 301 Section 4.1.2. Submit mix designs for each mix in the table below. Substantiating strength results from past tests shall not be older than 24 months per ACI 318 Section 5.3.

TABLE OF MIX DESIGN REQUIREMENTS

Member Type/Location	Strength f'c (psi)	Test Age (days)	Maximum Aggregate	Exposure Class	Max W/C Ratio	Air Content	Notes (1 to 8 Typical UNO)
Footings	3000	28	1"	-	-	-	-
Interior Slabs on Grade	3000	28	1"	-	0.5	-	-

Table of Mix Design Requirements Notes:

(1) W/C Ratio: Water–cementitious material ratios shall be based on the total weight of cementitious materials. Maximum ratios are controlled by strength noted in the Table of Mix Design Requirements and durability requirements given in ACI 318 Section 4.3.

(2) Cementitious Materials:
a. The use of fly ash, other pozzolans, silica fume, or slag shall conform to ACI 318 Sections 4.3.1 and 4.4.2. Maximum amount of fly ash shall be 25% of total cementitious content unless reviewed and approved otherwise by SER.
b. For concrete used in elevated floors, minimum cementitious-materials content shall conform to ACI 301 Table 4.2.2.1. Acceptance of lower cement content is contingent on providing supporting data to the SER for review and acceptance.
c. Cementitious materials shall conform to the relevant ASTM standards listed in ACI 318 Section 3.2.1.

(3) Air Content: Conform to ACI 318 Section 4.4.1. Minimum standards for exposure class are noted in the table. If freezing and thawing class is not noted, air content given is that required by the SER. Tolerance is ±1-½%. Air content shall be measured at point of placement.

(4) Aggregates shall conform to ASTM C33.

(5) Slump: Conform to ACI 301 Section 4.2.2.2. Slump shall be determined at point of placement.

(6) Chloride Content: Conform to ACI 318 Section 4.3.1.

(7) Non- chloride accelerator: Non-chloride accelerating admixture may be used in concrete placed at ambient temperatures below 50°F at the contractor's option.

(8) ACI 318, Section 4.2.1 exposure classes shall be assumed to be F0, S0, P0, and C0 unless different exposure classes are listed in the Table of Mix Design Requirements that modify these base requirements.

FORMWORK & RESHORING: Conform to ACI 301 Section 2 "Formwork and Form Accessories." Removal of Forms shall conform to Section 2.3.2 except strength indicated in Section 2.3.2.5 shall be 0.75 f' c.

MEASURING, MIXING, AND DELIVERY: Conform to ACI 301 Section 4.3.

HANDLING, PLACING, CONSTRUCTING AND CURING: Conform to ACI 301 Section 5. In addition, hot weather concreting shall conform to ACI 305.1-06 and cold weather concreting shall conform to ACI 306.1-90.

CONSTRUCTION JOINTS: Conform to ACI 301 Sections. 2.2.2.5, 5.2.2.1 and 5.3.2.6. Construction joints shall be located and detailed as on the construction drawings. Submit alternate locations per ACI 301 Section 5.1.2.3a for review and approval by the SER two weeks minimum prior to forming. Use of an acceptable adhesive, surface retardant, portland cement grout or roughening the surface is not required unless specifically noted on the drawings.

EMBEDDED ITEMS: Position and secure in place expansion joint material, anchors and other structural and non-structural embedded items before placing concrete. Contractor shall refer to mechanical, electrical, plumbing and architectural drawings and coordinate other embedded items.

STRENGTH TESTING AND ACCEPTANCE:

Testing: Obtain samples and conduct tests in accordance with ACI 301 Section 1.6.3.2. Additional samples may be required to obtain concrete strengths at alternate intervals than shown below.

- Cure 4 cylinders for 28-day test age, test 1 cylinder at 7 days, test 2 cylinders at 28 days, and hold 1 cylinder in reserve for use as the Engineer directs. After 56 days, unless notified by the Engineer to the contrary, the reserve cylinder may be discarded without being tested for specimens meeting 28-day strength requirements.
- The number of cylinders indicated above reference 6 by 12 in cylinders. If 4 by 8 in cylinders are to be used, additional cylinders must be cured for testing of 3 cylinders at test age per the table of mix design requirements.

Acceptance. Strength is satisfactory when:

(1) The averages of all sets of 3 consecutive tests equal or exceed the specified strength.

(2) No individual test falls below the specified strength by more than 500 psi.

A "test" for acceptance is the average strength of two 6 by 12 in. cylinders or three 4 by 8 in. cylinders tested at the specified test age.

CONCRETE PLACEMENT TOLERANCE: Conform to ACI 117-10 for concrete placement tolerance.

OVER-FRAMING / STRUCTURAL FOAM FILL / RIGID INSULATION

FOAM FILL: Structural foam fill / rigid insulation as shown on the drawings shall be InsulFoam GF, by InsulFoam LLC Engineered EPS, Type ASTM D6817, or approved equal. Provide in locations and thicknesses indicated on plans. Minimum Required Foam Properties are: Foam Type, InsulFoam EPS19; Density, 1.15 pcf; Compressive Resistance, 5.8 psi (at 1% deformation), 13.1 psi (at 5% deformation), and 16.0 psi (at 10% deformation).

CONCRETE REINFORCEMENT

REFERENCE STANDARDS: Conform to:
(1) ACI 301-10 "Standard Specifications for Structural Concrete", Section 3 "Reinforcement and Reinforcement Supports."
(2) ACI SP-66-04 "ACI Detailing Manual" including ACI 315-99 "Details and Detailing of Concrete Reinforcement."
(3) CRSI MSP-09, 28th Edition, "Manual of Standard Practice."
(5) IBC Chapter 19-Concrete.
(6) ACI 318-11 "Building Code Requirements for Structural Concrete."
(7) ACI 117-10 "Specifications for Tolerances for Concrete Construction and Materials"

SUBMITTALS: Conform to ACI 301 Section 3.1.1 "Submittals, data and drawings." Submit placing drawings showing fabrication dimensions and locations for placement of reinforcement and reinforcement supports.

MATERIALS:
Reinforcing Bars.....ASTM A615, Grade 60, deformed bars.
Bar Supports.....CRSI MSP-09, Chapter 3 "Bar Supports."
Tie Wire.....16 gage or heavier, black annealed.

FABRICATION: Conform to ACI 301, Section 3.2.2. "Fabrication", and ACI SP-66 "ACI Detailing Manual."

WELDING: Bars shall not be welded unless authorized. When authorized, conform to ACI 301, Section 3.2.2.2. "Welding", AWS D1.4, and provide ASTM A706, grade 60 reinforcement.

PLACING: Conform to ACI 301, Section 3.3.2 "Placement." Placing tolerances shall conform to ACI 117.

CONCRETE COVER: Conform to the following cover requirements unless noted otherwise in the drawings.
Concrete cast against earth .....3"
Concrete exposed to earth or weather .....2"

SPLICES: Conform to ACI 301, Section 3.3.2.7, "Splices". Refer to "Typical Lap Splice and Development Length Schedule" for typical reinforcement splices. Splices indicated on individual sheets shall control over the schedule. Mechanical connections may be used when approved by the SER.

FIELD BENDING: Conform to ACI 301 Section 3.3.2.8. "Field Bending or Straightening." Bar sizes #3 through #5 may be field bent cold the first time. Other bars require preheating. Do not twist bars. Bars shall not be bent past 45 degrees.

REINFORCED UNIT MASONRY

REFERENCE STANDARDS: Conform to:

1) IBC Chapter 21 "Masonry."
2) ACI 530-11/ASCE 5-11/TMS 402-11 "Building Code Requirements for Masonry Structures." Herein referenced as MSJC.
3) ACI 530.1-11/ASCE 6-11/TMS 602-11 "Specification for Masonry Structures." Herein referenced as MSJC.1.
4) ACI SP-66 "ACI Detailing Manual" including ACI 315 "Details and Detailing of Concrete Reinforcement."

SUBMITTALS: Conform to MSJC.1 Section 1.2. Submit shop drawings for review including:

1) Masonry reinforcement, size, layout, and grade in accordance with plans.
2) Material certificates for all Steel Reinforcing, Anchors, Ties and Metal Accessories certifying compliance with required strength, grade and ASTM standards.
3) Mix Designs for each Grout Mix indicating type and proportions of ingredients in compliance of Proportion Specification.
4) Location of expansion and control joints.
5) Product Information, ICC ESR Reports and Material Certifications certifying compliance for all non-pre-approved Post-Installed Anchors.

STRENGTH: The assumed compressive strength of the masonry assemblage, f'm, is 1500 psi based on IBC Section 2105.2.2.1.2 for concrete masonry and 2000 psi based on IBC Section 2105.2.2.1.1 for clay masonry.

MATERIALS:

1) Concrete Masonry Units: Conform to ASTM C 90, Type-I (moisture controlled), medium weight (approx. 115 PCF) units. Provide 1900 psi compressive strength to achieve masonry assembly strength indicated above under STRENGTH.

2) Mortar: Conform to ASTM C270, Type S, and IBC Section 2103.9 "Mortar."

3) Grout: Use fine grout except coarse grout may be used where permitted by MSJC Table 1.19.1.

4) Reinforcing Bars: Conform to ASTM A615, Grade 60 deformed bars and IBC Section 2103.14 unless noted otherwise. Lap Splices shall be as noted on plans. Fabrication shall be in accordance with MSJC.1 Section 2.7.

5) Joint Reinforcement: Conform to ASTM A951 and IBC Section 2103.14.

6) Anchors, Ties and Accessories: Conform to IBC Section 2103.14 and MSJC.1 Section 2.4D.

7) Water: Shall be clean and potable.

8) Admixtures: Admixtures shall not be used unless approved by SER.

9) Post-Installed Anchors in MASONRY: Reference the POST- INSTALLED ANCHORS section for applicable Post-Installed Anchors to Masonry.

10) Second-Hand Units: Shall not be used unless approved by SER.

QUALITY ASSURANCE(f'm=1500 psi): Conform to IBC Section 2105 "Quality Assurance".

1) Masonry Units: A letter of certification from the manufacturer of the units shall be provided to the SER prior to the delivery of the units to the jobsite to ensure the units comply with the compressive strength specified above and ASTM C 90.

2) Mortar: No mortar testing is required.

3) Grout: A letter of certification from the supplier of the grout shall be provided to the SER prior to delivery of the grout to the jobsite to ensure that the grout complies with ASTM C 476.

DELIVERY, STORAGE AND HANDLING: Delivery, storage and handling of materials used for masonry construction shall be per MSJC.1, Section 1.7.

SPECIAL INSPECTION: Special Inspections shall be performed per the "TESTS AND INSPECTIONS" section of the STRUCTURAL GENERAL NOTES.

ANCHORS, TIES AND CONNECTORS: Masonry anchors, ties and connectors shall be as specified on structural drawings. Consult architectural drawings for masonry anchor ties not included on the structural drawings.

EMBEDDED ITEMS: Embedded Items and Accessories shall be in accordance with MSJC Section 1.15 and installed in accordance with MSJC.1 Section 3.3D. Position and Secure in place expansion joint material, anchors and other structural and non-structural embedded items before placing grout. Contractor shall refer to structural, architectural, mechanical, electrical, plumbing, etc. and coordinate all embedded items.

POST-INSTALLED ANCHORS to MASONRY: Anchor location, type, diameter and embedment shall be as indicated on drawings. Reference the POST INSTALLED ANCHORS section for applicable Post-Installed Anchor Adhesives. Anchors shall be installed and inspected in strict accordance with the applicable ICC-Evaluation Service Report (ESR). Special inspection shall be per the TESTS and INSPECTIONS section.

MASONRY REINFORCING STEEL: Masonry reinforcing shall be as noted on plans and shall be securely placed in accordance with IBC Sections 2104.1.1, 2106, 2107, and 2108 and MSJC Section 1.16. Unless otherwise noted on the plans, the minimum wall reinforcement shall be as follows:

Bond beams with horizontal bar or bars shall be provided at 48 inches on center and at all floor and roof lines and at the top of the wall. Provide a bond beam with horizontal bar or bars over all openings, and extend these bars 2'-0" past the opening at each side. Provide a bar or bars vertically for the full height of the wall at each side of openings, wall ends and intersections. Dowels to masonry walls shall be embedded a minimum of 1'-6" or hooked into the supporting structure and be of the same size and spacing as wall reinforcing. Reinforcing steel shall be as specified under "MATERIALS" Section. Provide corner bars to match the horizontal wall reinforcing at wall intersections. All bars shall be lapped a minimum 48 diameters or 1'-6" minimum unless noted on the plans.

CONSTRUCTION: Masonry shall be constructed in accordance with IBC Section 2104 "Construction", and MSJC.1 Part 3 "Execution."

BLOCK PATTERN: Use running bond unless noted. For stack bond, follow criteria in MSJC Section 1.11.

GROUTED CELLS: Fill all cells with grout unless noted otherwise on plans. Fill cells with grout at (E) CMU walls per plan. Minimum grouting spaces and construction shall be in accordance with MSJC Section 1.16 and MSJC.1 Section3.5.

GROUT POUR HEIGHT: Grout Pour Height shall not exceed height specified in MSJC.1 Section 3.5C.
- Masonry blocks shall be adequately braced to withstand fluid pressures of Grout Pour, see temporary bracing.

GROUT LIFTS: Unless otherwise noted, Grout Lifts and pour height shall not exceed 5ft 4in. Grout Lifts shall not exceed spacing of intermediate reinforced bond beams. Grout Lifts exceeding 5ft 4in shall be approved by SER.

REINFORCING COVER AND CLEARANCE REQUIREMENTS: Unless otherwise noted:

Clear distance between parallel bars (and between adjacent pairs of lap spliced bars) shall be equal to the bar adjacent bar diameter (for bars greater than #8), and not less than:
1) 1" at 8" and smaller block,
2) 2" at 10" block
3) 3" at 12" block.
Clearance (clear space) between the block and the reinforcing shall be:
1) ¼" at fine grout
2) ½" at course grout.
Masonry Cover (including grout and block wall) at masonry face exposed to earth or weather shall be:
1) 1 1/2" minimum
2) 2" for bars #6 and larger.

TEMPORARY BRACING: Contractor is responsible for all temporary bracing of masonry during construction. Reference "CONTRACTOR RESPONSIBILITIES" section for further information and requirements.

POST-INSTALLED ANCHORS (INTO CONCRETE AND MASONRY)

REFERENCE STANDARDS: Conform to:
1) IBC Chapter 19 "Concrete"
2) ACI 318-11 "Building Code Requirements for Structural Concrete"
3) IBC Chapter 21 "Masonry"
4) ACI 530-11/ASCE 5-11/TMS402-11 "Building Code Requirements for Masonry Structures"

POST-INSTALLED ANCHORS: Install only where specifically shown in the details or allowed by SER. All post-Installed anchors types and locations shall be approved by the SER and shall have a current ICC-Evaluation Service Report that provides relevant design values necessary to validate the available strength exceeds the required strength. Submit current manufacturer's data and ICC ESR report to SER for approval regardless of whether or not it is a pre-approved anchor. Anchors shall be installed in strict accordance to ICC-ESR and manufacturer's instructions. No reinforcing bars shall be damaged during installation of post-installed anchors. Special inspection shall be per the TESTS and INSPECTIONS section. Anchor type, diameter and embedment shall be as indicated on drawings.

1. ADHESIVE ANCHORS: The following Adhesive-type anchoring systems have been used in the design and shall be used for anchorage to CONCRETE and MASONRY, as applicable and in accordance with corresponding current ICC ESR report. Drilled-in anchor embedment lengths shall be as shown on drawings, or not less than 7 times the anchor nominal diameter (7D).
   a. SIMPSON "SET-XP" – ICC ESR 2508 for anchorage to CONCRETE, IAPMO 265 for anchorage to MASONRY

WOOD FRAMING

REFERENCE STANDARDS: Conform to:
(1) IBC Chapter 23 "WOOD"
(2) NDS - "2012 National Design Specification (NDS) for Wood Construction"
(3) ANSI/AF&PA – SDPWA-08: Special Design Provisions for Wind and Seismic
(4) APA PDS—04 Plywood Design Specification
(5) ANSI/TPI 1-2007 "National Design Standard for Metal-Plate-Connected Wood Truss Construction"
(6) BCSI "Guide to Good Practice for Handling, Installing & Bracing of Metal Plated Connected Wood Trusses"
(7) TPI DSB "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses"
(8) APA Report TT-045B "Minimum Nail Penetration for Wood Structural Panel Connections Subject to Lateral Loads"

DEFERRED SUBMITTALS: Submit product data and proof of ICC approval for framing members and fasteners that have been designed by others. Submit calculations prepared by the SSE in the state of **Alaska** for all members and connections designed by others along with shop drawings. All necessary bridging, blocking, blocking panels and web stiffeners shall be detailed and furnished by the supplier. Temporary and permanent bridging shall be installed in conformance with the manufacturer's specifications. Deflection limits shall be as noted under DEFFERRED SUBMITTLALS section specific details. Products included are:

- Metal plate connected trusses (prefabricated trusses) Conform to IBC Section 2303.4. Truss Supplier to provide design and materials for all permanent truss bracing. Shop drawings shall provide for shapes, bearing points, intersections, hips, and valleys shown on the drawings. The manufacturer shall provide special hip, valley and intersection areas (step down trusses, jack trusses and girder trusses) unless specifically indicated on the plans. Provide all truss-to-truss and truss-to-support connection details and required connection materials. Specify temporary and permanent bracing and connections on the shop drawings. Provide all truss reactions on shop drawings.

IDENTIFICATION: All sawn lumber and pre-manufactured wood products shall be identified by the grade mark or a certificate of inspection issued by the certifying agency.

MATERIALS:

- Sawn Lumber: Conform to grading rules of WWPA, WCLIB or NLGA and Table below. Finger jointed studs acceptable at interior walls only.

TABLE of SOLID SAWN LUMBER

Member Use	Size	Species	Grade
Wall Stud	2x4, 3x4, 2x6, 3x6	Hem Fir	No. 2
Sill Plate	2x4, 3x4, 2x6, 3x6	PT Hem Fir	No. 2
Post	4x4, 4x6, 4x8	Hem Fir	No. 2
Floor or Roof Joist	2x6 through 2x12	Hem Fir	No. 2
Beam	4x8 through 4x12	Hem Fir	No. 2
Beam	6x8 through 6x12	Doug Fir Larch	No. 1
Post or Timber	6x6, 8x8	Doug-Fir Larch	No. 1

- Glued Laminated Timber: Conform to AITC 117-**2004** "Standard Specifications for Structural Glue-laminated Timber of Softwood Species, Manufacturing and Design" and ANSI/AITC A190.1 "Structural Glued Laminated Timber." Camber all glued laminated beams, except cantilevered and continuous beams, to 3000' radius, unless shown otherwise on the plans.

TABLE of GLULAM and GRADE

Member	Sizes	Species	Comb. Symbol	Uses
Beams	All	DF/DF	24F–V4	Simple Spans

- Wood Structural Sheathing (Plywood): Wood APA-rated structural sheathing includes: all veneer plywood, oriented strand board, waferboard, particleboard, T1-11 siding, and composites of veneer and wood based material with T&G joint. **Architect** may disallow OSB. Confirm with **Architect**. Conform to "Construction and Industrial Plywood" based on Product Standard PS 1-07 by the U.S. Dept. of Commerce, and "Performance Standard for Wood-Based Structural-Use Panels" based on Product Standard PS 2-04 by the U.S. Dept. of Commerce and "Plywood Design Specification" based on APA PDS—04 by the American Plywood Association. Unless noted otherwise, sheathing shall comply with the following table:

TABLE of SHEATHING - Use, Minimum Thickness and Minimum APA Rating

Location	Thickness	Span Rating	Plywood Grade	Exposure
Floor	23/32" T&G	24 OC	STURD-I-FLOOR	1
Walls	15/32"	32/16	C-D	1
Roof	19/32"	40/20	C-D	1

Unless noted otherwise on drawings, install roof and floor panels with long dimension across supports and with panel continuous over two or more spans. End joints shall occur over supports.

- Timber Connectors: Shall be "Strong Tie" by Simpson Company as specified in their latest catalog. Alternate connectors by other manufacturers may be substituted provided they have current ICC approval for equivalent or greater load capacities and are reviewed and approved by the SER prior to ordering. Connectors shall be installed per the manufacturer's instructions. Where connector straps connect two members, place one-half of the nails or bolts in each member. Where straps are used as hold-downs, nail straps to wood framing just prior to drywall application, as late as possible in the framing process to allow the wood to shrink and the building to settle. Premature nailing of the strap may lead to strap buckling and potential finish damage.

  Where connectors are in exposed exterior applications in contact with preservative treated wood (PT) other than CCA, connectors shall be either batch hot-dipped galvanized (HDG), mechanically galvanized (ASTM B695, Class 55 minimum) stainless steel, or provided with 1.85 oz/sf of zinc galvanizing equal to or better than Simpson ZMAX finish.

  Nail straps to wood framing as late as possible in the framing process to allow the wood to shrink and the building to settle. Premature nailing of the strap may lead to strap buckling and potential finish damage.

- Fasteners (nails, bolts, screws, etc) attaching timber connectors (joist hangers, post caps and bases, etc) to PT wood shall have similar corrosion resistance properties (matching protective treatments) as the protected connector. Fasteners (nails, bolts, screws, etc) attaching sawn timber members or sheathing (shear walls) to PT wood be corrosion resistant; nails and lag bolts shall be either HDG (ASTM A153) or stainless steel. Verify the suitability of the fastener protection/coating with the wood treatment chemical manufacturer/supplier.

  Provide washers under the heads and nuts of all bolts and lag screws bearing on wood.

- Lag Bolts/Bolts: Conform to ASTM A307 and IBC Section 2304.9.

- Engineered Wood Products (TrusJoist): The following materials are based on lumber manufactured by TrusJoist and were used for the design as shown on the plans. Alternate products by other manufacturers may be substituted provided they have current ICC approval for equivalent or greater load and stiffness properties and are reviewed and approved by the Structural Engineer.

  a. Laminated Strand Lumber (LSL): Conform to **ICC ES Report No. ESR-1387** or CCMC Report No. 12627–R.

TABLE of ENGINEERED WOOD Requirements

Type	Use	Widths	E(10⁶)	Fb	Fv	Fc//
			PSI	PSI	PSI	PSI
Timberstrand LSL	Rimboard, Header or Beam ≥ 9" depth	1 ¾", 3 ½"	1.55E	2,325	310	2,050

NAILING REQUIREMENTS: Conform to IBC Section 2304.9 "Connections and fasteners." Unless noted on plans, nail per Table 2304.9.1. Nailing for roof/floor diaphragms/shear walls shall be per drawings. Nails shall be driven flush and shall not fracture the surface of sheathing. Alternate nails may be used but are subject to review and approval by the Structural Engineer. Substitution of staples for the nailing of rated sheathing is subject to review by the structural engineer prior to construction.

STANDARD LIGHT-FRAME CONSTRUCTION: Unless noted on the plans, construction shall conform to IBC Section 2308 "Conventional Light-Frame Construction."

WOOD SHRINKAGE AND EXPANSION: Wood materials will expand or contract based on relative changes in moisture. The contractor is responsible for means and methods of construction related to mitigating and managing the effects of changes in moisture.

MOISTURE CONTENT: Wood material used for this project shall have maximum moisture content of 19% except for the pressure-treated wood sill plate. Refer to TESTING & INSPECTIONS for the verification of these limits. The maximum moisture content required may be less than 19% when based on a particular cladding/insulation system. Refer to the Architect's drawings, and project specifications, or with cladding installer for maximum recommended moisture content.

SHRINKAGE COMPENSATION FOR MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS: MEP systems, including ductwork, pipes, and other elements that run continuously between levels shall be installed/designed in such a manner to accommodate shrinkage in the wood framing. Wood shrinkage amounts will vary depending on the construction process and materials used. The anticipated shrinkage under typical conditions is expected to range between 1/8" and 1/4" per floor.

CLADDING COMPATIBILITY: The Architect/Owner shall review the cladding and insulation systems proposed for the project with respect to their performance over wood studs with moisture contents greater than 19%. EIFS systems should be avoided on wood-framed projects due to problems with moisture proofing.

PRESERVATIVE TREATMENT (PT): Wood materials are required to be "treated wood" in accordance with IBC Section 2304.11. "Decay and Termite Protection" shall conform to the appropriate standards of the American Wood-Preservers Association (AWPA) for sawn lumber, glued laminated timber, round poles, wood piles and marine piles. Follow American Lumber Standards Committee (ALSC) quality assurance procedures. Products shall bear the appropriate mark. Fasteners or anchors in treated wood shall be of stainless steel or hot-dipped galvanized or as per IBC 2304.9.5.

Always verify the suitability of the fastener protection/coating with the wood treatment chemical manufacturer/supplier.

Plot Date Time: 7/15/2021 4:12:05 PM

FOR PERMIT
These drawings are sufficiently complete for submission to the jurisdiction having authority for permit. The Contractor shall not use these drawings for construction until Contractor receives written approval for use in construction by the jurisdiction having authority and DCI Engineers.

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STATE OF ALASKA 49TH PAUL D. ROMESS No. SE13924 REGISTERED PROFESSIONAL ENGINEER EXPIRES: 12/31/21

KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions

No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL GENERAL NOTES CONTINUED

Sheet No.
S002

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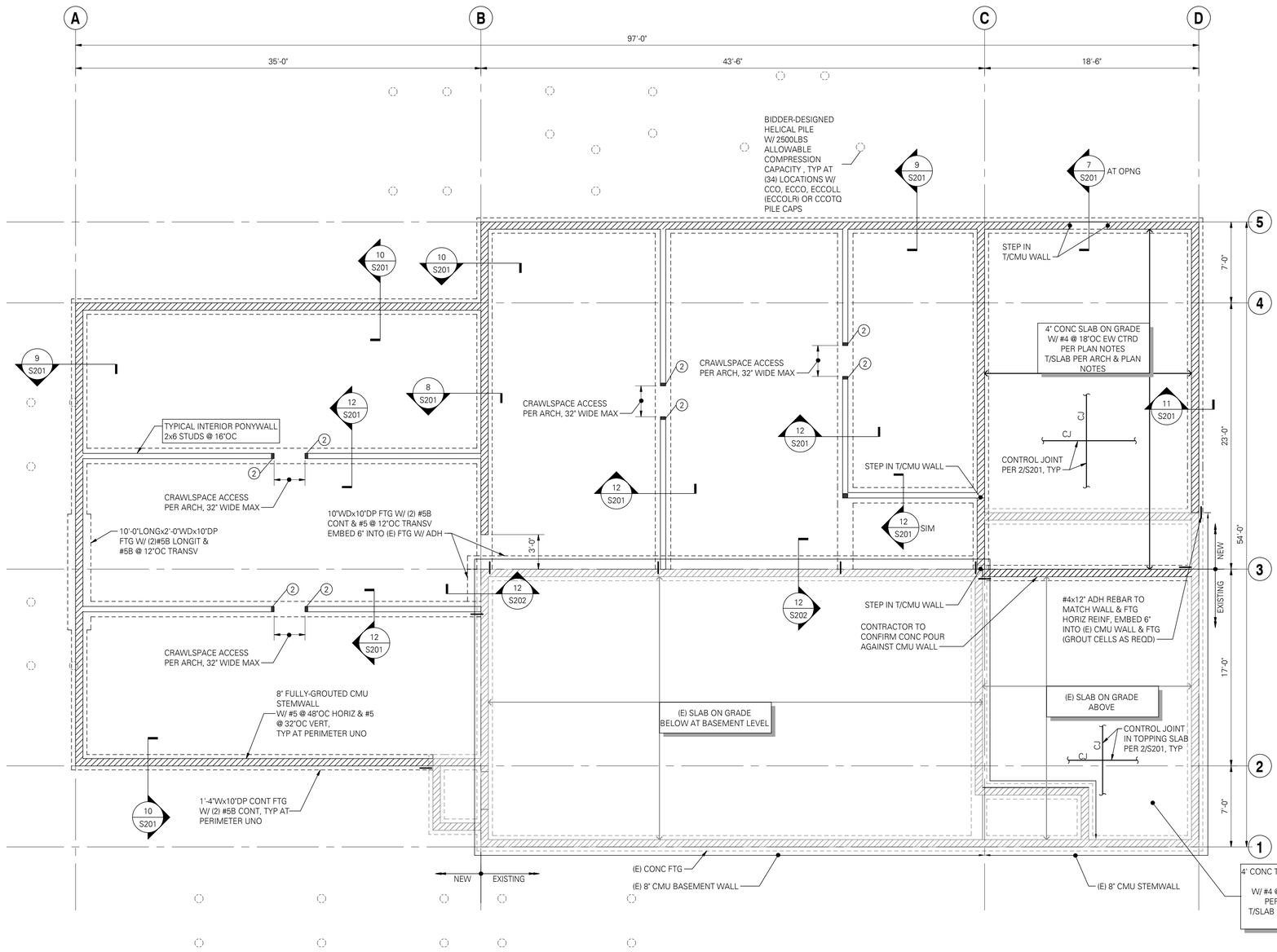

FOUNDATION PLAN NOTES:

1. STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND PER S001 & S002.
2. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS. ALL EXISTING DIMENSIONS SHALL BE FIELD VERIFIED.
3. CONTRACTOR SHALL LOCATE AND VERIFY THE FOLLOWING WITH OTHER DISCIPLINES PRIOR TO POURING CONCRETE: ALL DOOR OPENINGS IN FOUNDATION WALLS; DRAINS AND SLOPES; BLOCKOUTS. ALL DUCTS, CHASES AND PIPES PER MECHANICAL, PLUMBING, ELECTRICAL AND SPRINKLER DRAWINGS. STAIR DETAILS AND GUARDRAILS PER ARCHITECTURAL DRAWINGS. CONCRETE CURBS AND LOCATIONS PER ARCHITECTURAL DRAWINGS.
4. TOP OF SLAB (T/SLAB) ELEVATION ASSUMED -2'-0". FOR ACTUAL T/SLAB ELEVATION REFER TO CIVIL AND ARCHITECTURAL DRAWINGS. PROVIDE 6 MIL VAPOR BARRIER BELOW SLAB AT INTERIOR SPACES. PROVIDE FREE-DRAINING GRANULAR FILL PER GEOTECH REPORT.
5. ALL FOOTINGS AND SLABS TO BEAR ON COMPETENT NATIVE SOIL AND/OR STRUCTURAL FILL. SUBGRADE PREPARATION, STRUCTURAL FILL, FOOTING DRAINS, AND OTHER REQUIREMENTS PER GEOTECH REPORT AS NOTED IN THE STRUCTURAL GENERAL NOTES.
6. CJ INDICATES CONTROL JOINT PER PLAN.
7. ALL WOOD EXPOSED TO CONCRETE, WEATHER, OR WITHIN 8" OF FINISHED GRADE SHALL BE PRESSURE-TREATED.
8. MOISTURE PROOF ALL CONCRETE STEM AND BASEMENT WALLS PER ARCHITECT.
9. TYPICAL DETAILS PER:

1/S201	STANDARD HOOKS AND BAR BENDS
3/S201	LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE
4/S201	LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE FOR STRUCTURAL MASONRY
5/S201	PLAN - TYPICAL CORNER REINFORCING AT CONCRETE FOOTING
6/S201	PLAN - TYPICAL CORNER REINFORCING AT CMU WALLS

STUD AND SHEAR WALL PLAN NOTES:

1. STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND PER S001 & S002.
2. LUMBER GRADE PER STRUCTURAL GENERAL NOTES.
3. ALL INTERIOR NON-BEARING, NON-STRUCTURAL WALL STUD REQUIREMENTS PER STRUCTURAL GENERAL NOTES.
4. HEADERS SHOWN ON FRAMING PLAN SHALL BE SUPPORTED BY (1) TRIMMER AND (2) KING STUDS MINIMUM, UNO. WHERE MORE THAN (1) TRIMMER IS REQUIRED, THE NUMBER OF TRIMMER STUDS SHALL BE NOTED THUS: ■② . TRIMMERS TO BE CONTINUOUS TO THE FOUNDATION. BLOCK SOLID AT FLOOR FRAMING.
5. BEAMS SHOWN ON FRAMING PLAN SHALL BE SUPPORTED BY (2) BUNDLED STUDS MINIMUM, UNO. WHERE MORE THAN (2) BUNDLED STUDS ARE REQUIRED, THE NUMBER OF BUNDLED STUDS SHALL BE NOTED THUS: ■③ . BUNDLED STUDS TO BE CONTINUOUS TO THE FOUNDATION. BLOCK SOLID AT FLOOR FRAMING.
6. SHEAR WALL AND NAILING REQUIREMENTS PER SHEAR WALL SCHEDULE 5/S301.
7. ALL EXTERIOR WALLS REQUIRING WOOD SHEATHING PER THE ARCHITECT SHALL BE SHEAR WALL TYPE W6 UNO.
8. HD (2) 2x ② INDICATES HOLD-DOWN TYPE PER HOLD-DOWN SCHEDULE 9/S301. CIRCLED NUMBER INDICATES NUMBER OF TRIM STUDS REQUIRED AND BOTTOM NUMBER INDICATES NUMBER OF FULL HEIGHT (KING) STUDS REQUIRED IN ADDITION TO BUNDLED OR TRIM STUDS OR POSTS SHOWN ON PLAN.
9. TYPICAL HOLD-DOWN ELEVATION PER 11/S301.
10. ANCHOR BOLTS TO BE 5/8" DIA x 7" MINIMUM EMBEDMENT PER 7/S301. PROVIDE HOT-DIPPED GALVANIZED ANCHOR BOLTS AT PRESSURE-TREATED SILL PLATES.
11. TYPICAL DETAILS PER:

3/S301	TYPICAL TOP PLATE SPLICE DETAIL
8/S301	TYPICAL SHEAR WALL ELEVATION
3/S302	TYPICAL STUD WALL OPENING (HEADER) DETAIL
4/S302	TYPICAL NAILING FOR BUNDLED STUDS
10/S302	TYPICAL BUILT-UP 2x HEADER OR BEAM
11/S302	PLAN - INTERSECTING SHEAR WALLS
12/S302	TYPICAL HOLES AND NOTCHES IN WOOD STUDS

FOR PERMIT
These drawings are sufficiently complete for submission to the jurisdiction having authority for permit. The Contractor shall not use these drawings for construction until Contractor receives written approval for use in construction by the jurisdiction having authority and DCI Engineers.

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STATE OF ALASKA — REGISTERED PROFESSIONAL ENGINEER — PAUL D. ROMESS — No. SE13924 — EXPIRES: 12/31/21

KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL FOUNDATION AND STUD AND SHEAR WALL PLAN

Sheet No.
S100

FOUNDATION AND STUD AND SHEAR WALL PLAN

SCALE: 3/16" = 1'-0"

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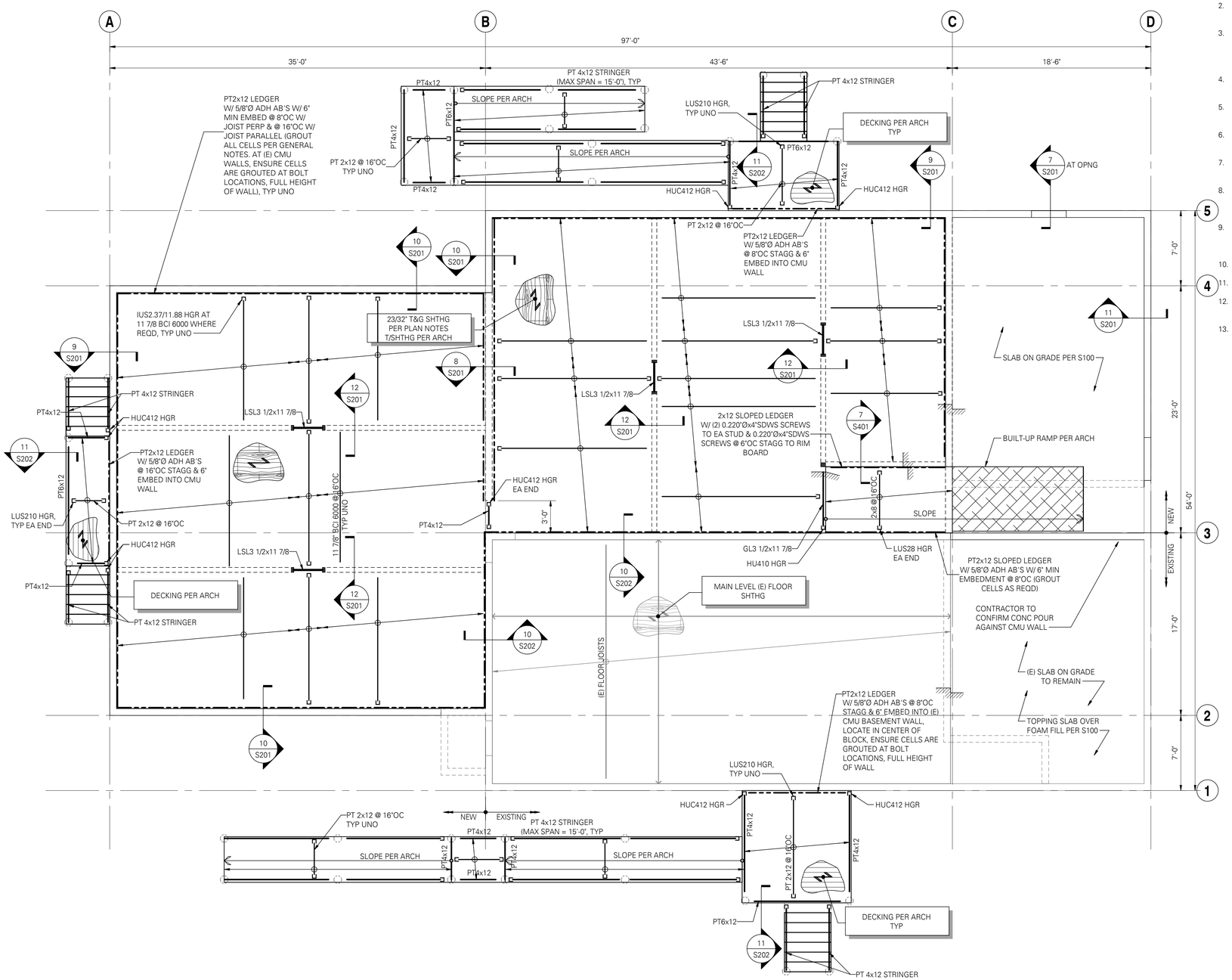

FLOOR FRAMING PLAN NOTES:

1. STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND PER S001 AND S002.
2. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS. ALL EXISTING DIMENSIONS SHALL BE FIELD VERIFIED.
3. FLOOR SHEATHING PER PLAN AND STRUCTURAL GENERAL NOTES. SHEATHING TO BE GLUED AND NAILED TO FRAMING WITH 0.131" DIAx2 1/2" NAILS @ 6"OC AT SUPPORTED PANEL EDGES AND @ 12"OC FIELD, UNO. LAY SHEATHING WITH FACE GRAIN (LONG DIRECTION) PERPENDICULAR TO SUPPORTS AND STAGGER PANEL END JOINTS. ALLOW 1/8" SPACE BETWEEN PANEL ENDS AND EDGES.
4. ALL DUCTS, CHASES AND PIPES SHALL BE PER MECHANICAL, PLUMBING, ELECTRICAL AND SPRINKLER DRAWINGS. STAIR DETAILS AND GUARDRAILS PER ARCHITECTURAL DRAWINGS.
5. ALL WOOD EXPOSED TO CONCRETE, WEATHER, OR WITHIN 8" OF FINISHED GRADE SHALL BE PRESSURE-TREATED.
6. ALL 2x HANGERS TO BE FACE MOUNT TYPE LUS, UNO. GLULAM, PARALLAM AND MICROLLAM HANGERS ARE AS SPECIFIED ON PLAN.
7. HEADERS SHOWN BUT NOT SPECIFIED ARE TO BE (2) 2x8 MINIMUM. HEADER SUPPORTS PER STUD AND SHEAR WALL PLAN ON FLOOR BELOW.
8. BEAMS ARE FLUSH FRAMED WITH JOISTS UNLESS NOTED OTHERWISE ON DETAILS, OR ON PLANS AS "DB" INDICATING THAT DROPPED BEAM FRAMING IS REQUIRED. BEAM SUPPORTS PER STUD AND SHEAR WALL PLAN ON FLOOR BELOW. PROVIDE A35 CLIP EACH SIDE OF FLUSH BEAMS THAT BEAR ON DOUBLE TOP PLATES.
9. PROVIDE FULL HEIGHT SOLID BLOCKING OR DOUBLE JOISTS UNDER ALL SHEAR WALLS AND BEARING WALLS. AT SHEAR WALLS PARALLEL TO FRAMING, ALIGN (1) JOIST OVER SHEAR WALL (ADDITIONAL JOISTS MAY BE REQUIRED).
10. ALL RIM JOISTS AND BLOCKING TO BE 1 1/2" LSL MINIMUM UNO.
11. PROVIDE DOUBLE JOISTS AROUND ALL FLOOR AND ROOF OPENINGS GREATER THAN 24" ON ONE SIDE.
12. BEARING STUD, SHEAR WALL, HOLD-DOWN, POST SIZE, AND POST CAP AND BASE REQUIREMENTS BELOW PER STUD AND SHEAR WALL PLAN ON FLOOR BELOW.
13. TYPICAL DETAILS PER:

    3/S401 PLAN - TYPICAL FLOOR AND ROOF SHEATHING ATTACHMENT

FOR PERMIT
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KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL LEVEL 1 FRAMING PLAN

LEVEL 1 FRAMING PLAN

SCALE: 3/16" = 1'-0"

Sheet No.
S101

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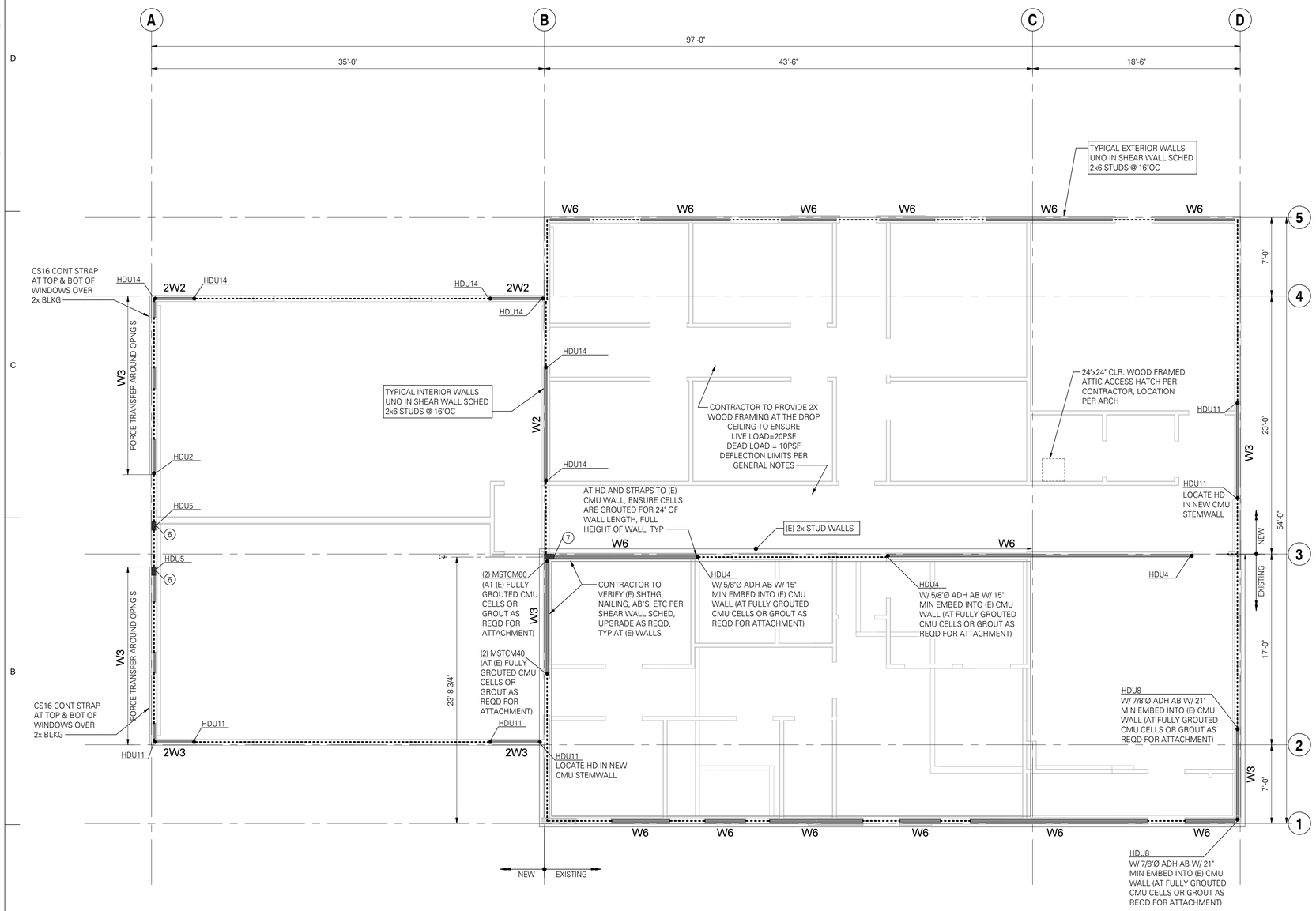
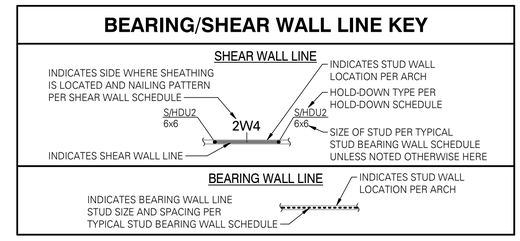


STUD AND SHEAR WALL PLAN NOTES:

1. STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND PER S001 & S002.
2. LUMBER GRADE PER STRUCTURAL GENERAL NOTES.
3. ALL INTERIOR NON-BEARING, NON-STRUCTURAL WALL STUD REQUIREMENTS PER STRUCTURAL GENERAL NOTES.
4. HEADERS SHOWN ON FRAMING PLAN SHALL BE SUPPORTED BY (1) TRIMMER AND (2) KING STUDS MINIMUM, UNO. WHERE MORE THAN (1) TRIMMER IS REQUIRED, THE NUMBER OF TRIMMER STUDS SHALL BE NOTED THUS: ■-② . TRIMMERS TO BE CONTINUOUS TO THE FOUNDATION. BLOCK SOLID AT FLOOR FRAMING.
5. BEAMS SHOWN ON FRAMING PLAN SHALL BE SUPPORTED BY (2) BUNDLED STUDS MINIMUM, UNO. WHERE MORE THAN (2) BUNDLED STUDS ARE REQUIRED, THE NUMBER OF BUNDLED STUDS SHALL BE NOTED THUS: ■-③ . BUNDLED STUDS TO BE CONTINUOUS TO THE FOUNDATION. BLOCK SOLID AT FLOOR FRAMING.
6. SHEAR WALL AND NAILING REQUIREMENTS PER SHEAR WALL SCHEDULE 5/S301.
7. ALL EXTERIOR WALLS REQUIRING WOOD SHEATHING PER THE ARCHITECT SHALL BE SHEAR WALL TYPE W6 UNO.
8. HD (2) 2x ■-○ INDICATES HOLD-DOWN TYPE PER HOLD-DOWN SCHEDULE 9/S301. CIRCLED NUMBER INDICATES NUMBER OF TRIM STUDS REQUIRED AND BOTTOM NUMBER INDICATES NUMBER OF FULL HEIGHT (KING) STUDS REQUIRED IN ADDITION TO BUNDLED OR TRIM STUDS OR POSTS SHOWN ON PLAN.
9. TYPICAL HOLD-DOWN ELEVATION PER 11/S301.
10. ANCHOR BOLTS TO BE 5/8" DIA x 7" MINIMUM EMBEDMENT PER 7/S301. PROVIDE HOT-DIPPED GALVANIZED ANCHOR BOLTS AT PRESSURE-TREATED SILL PLATES.
11. TYPICAL DETAILS PER:

3/S301	TYPICAL TOP PLATE SPLICE DETAIL
8/S301	TYPICAL SHEAR WALL ELEVATION
3/S302	TYPICAL STUD WALL OPENING (HEADER) DETAIL
4/S302	TYPICAL NAILING FOR BUNDLED STUDS
10/S302	TYPICAL BUILT-UP 2x HEADER OR BEAM
11/S302	PLAN - INTERSECTING SHEAR WALLS
12/S302	TYPICAL HOLES AND NOTCHES IN WOOD STUDS

BEARING/SHEAR WALL LINE KEY



LEVEL 1 STUD AND SHEAR WALL PLAN

SCALE: 3/16" = 1'-0"

FOR PERMIT
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STATE OF ALASKA · 49TH · PAUL D. ROMESS · No. SE13924 · REGISTERED PROFESSIONAL ENGINEER · EXPIRES: 12/31/21

KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL LEVEL 1 STUD AND SHEAR WALL PLAN

Sheet No.
S101A

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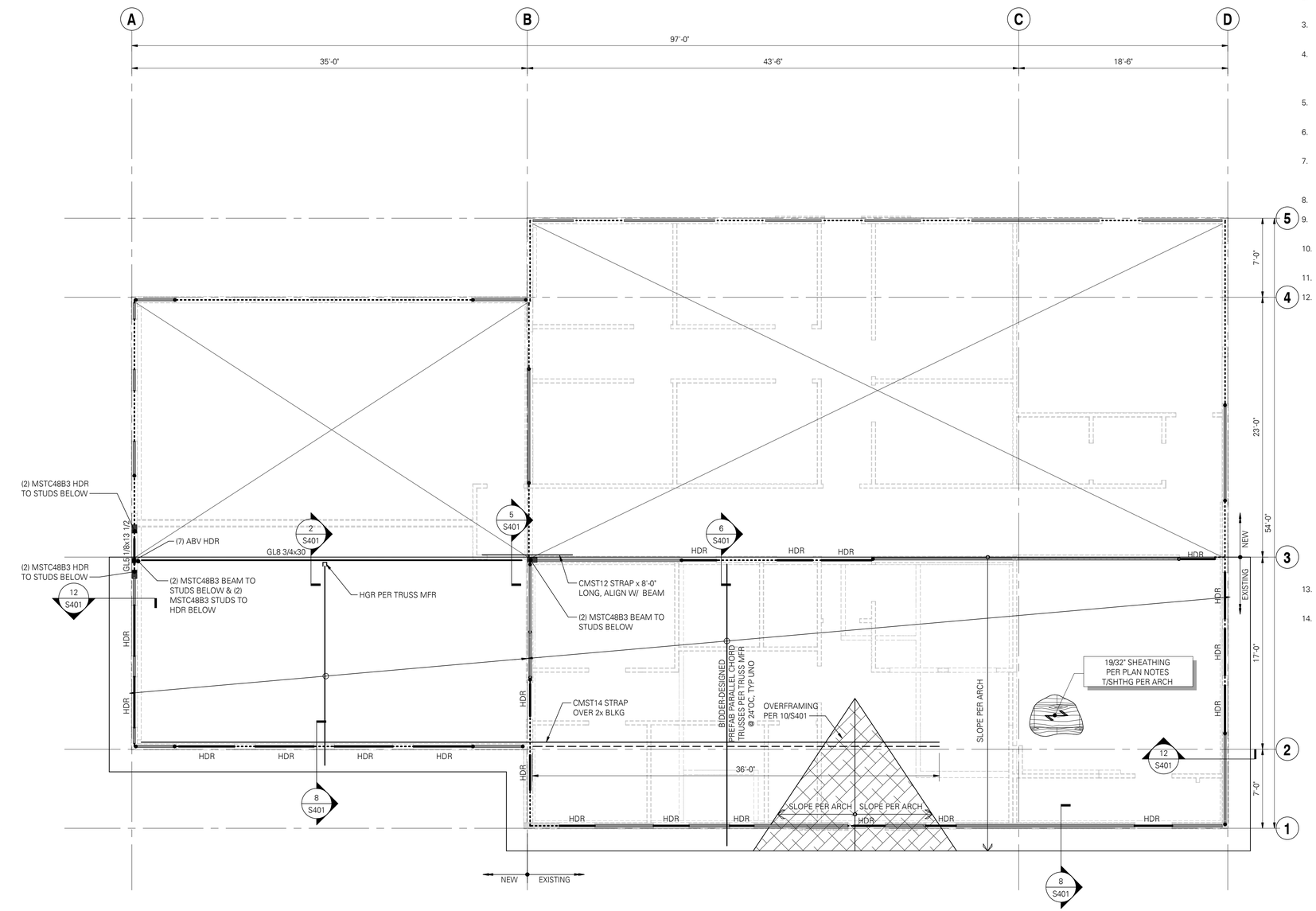

ROOF FRAMING PLAN NOTES:

1. STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND PER S001, S002.
2. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS. ALL EXISTING DIMENSIONS SHALL BE FIELD VERIFIED.
3. ALL DUCTS, CHASES AND PIPES SHALL BE PER MECHANICAL, PLUMBING, ELECTRICAL AND SPRINKLER DRAWINGS. STAIR DETAILS AND GUARDRAILS PER ARCHITECTURAL DRAWINGS.
4. ROOF SHEATHING PER PLAN AND STRUCTURAL GENERAL NOTES. SHEATHING TO BE NAILED TO ROOF FRAMING WITH 0.131"DIAx2 1/2" NAILS @ 6"OC AT SUPPORTED PANEL EDGES AND @ 12"OC FIELD, UNO. LAY SHEATHING WITH FACE GRAIN (LONG DIRECTION) PERPENDICULAR TO SUPPORTS AND STAGGER PANEL END JOINTS. ALLOW 1/8" SPACE BETWEEN PANEL ENDS AND EDGES.
5. ALL 2x HANGERS TO BE FACE MOUNT TYPE LUS, UNO. GLULAM, PARALLAM AND MICROLLAM HANGERS ARE AS SPECIFIED ON PLAN.
6. HEADERS SHOWN BUT NOT SPECIFIED ARE TO BE (2) 2x8 MINIMUM. HEADER SUPPORTS PER STUD AND SHEAR WALL PLAN ON FLOOR BELOW.
7. BEAMS ARE FLUSH FRAMED WITH JOISTS UNLESS NOTED OTHERWISE ON DETAILS, OR ON PLANS AS "DB" INDICATING THAT DROPPED BEAM FRAMING IS REQUIRED. BEAM SUPPORTS PER STUD AND SHEAR WALL PLAN ON LEVEL BELOW. PROVIDE A35 CLIP EACH SIDE OF FLUSH BEAMS THAT BEAR ON DOUBLE TOP PLATES.
8. PROVIDE SIMPSON H2.5A TIES AT ALL ROOF TRUSSES TYPICAL.
9. PROVIDE SOLID BLOCKING OVER ALL SHEAR WALLS AND BEARING WALLS. AT SHEAR WALLS PARALLEL TO FRAMING, ALIGN JOIST OR TRUSS OVER SHEAR WALL (ADDITIONAL JOISTS OR TRUSSES MAY BE REQUIRED).
10. HORIZONTAL STRAP TIES INDICATED ON THE FRAMING PLAN ARE TO BE CENTERED OVER WALL TOP PLATE AND/OR HEADER, BLOCKING OR BEAM.
11. ALL RIM JOISTS AND BLOCKING TO BE 1 1/2" LSL MINIMUM UNO.
12. ROOF TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING CRITERIA:
    - ROOF SYSTEM TO BE BIDDER DESIGNED. ROOF PLAN SHOWN IS A SUGGESTED CONFIGURATION. CHANGES MUST BE SUBMITTED TO THE ENGINEER-OF-RECORD THRU THE ARCHITECT WITH BEARING POINTS AND REACTIONS TO STRUCTURE. TRUSS CONFIGURATION SHALL MATCH ARCHITECTURAL DESIGN.
    - TRUSS LAYOUT SHOWN IS APPROXIMATE. TRUSS SUPPLIER IS RESPONSIBLE FOR FINAL TRUSS LAYOUT AND CONFIGURATION. NOTIFY ENGINEER OF REVISIONS TO PLAN.
    - STANDARD DEAD AND LIVE LOADS AND SUBMITTAL INFORMATION PER STRUCTURAL GENERAL NOTES.
    - [2000LBS] INDICATES SHEAR TRANSFER LOAD IN ROOF TRUSS TO BE LOCATED ABOVE SHEAR WALLS TRUSS. MANUFACTURER SHALL DESIGN THESE TRUSSES FOR THE BRACKETED LATERAL LOAD SPECIFIED ON PLAN, IN ADDITION TO THE DESIGN DEAD AND LIVE LOADS.
    - SHADED REGION INDICATES APPROXIMATE AREA OF OVER-FRAMING. TRUSS MANUFACTURER IS RESPONSIBLE FOR DESIGNING THE OVER-FRAMING REQUIRED. TRUSSES SHALL BE DESIGNED TO SUPPORT OVER-FRAMING IN ADDITION TO THE SPECIFIED DESIGN LOADS.
    - ALL GIRDER TRUSSES SHALL BE SUPPORTED BY A MINIMUM OF TWO STUDS. TRUSS MANUFACTURER TO SUBMIT TO ENGINEER GIRDER TRUSSES REACTIONS.
    - PROVIDE SIMPSON H2.5A HURRICANE TIES AT ALL ROOF TRUSSES AND ROOF JOISTS, TYPICAL.
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    - TRUSS MANUFACTURER TO DESIGN BEARING AT TOP PLATES FOR COMPRESSION PERPENDICULAR TO GRAIN f'c = 405 PSI.
13. BEARING STUD, SHEAR WALL, HOLD-DOWN, POST SIZE, AND POST CAP AND BASE REQUIREMENTS BELOW PER STUD AND SHEAR WALL PLAN.
14. TYPICAL DETAILS PER:

    3/S401 TYPICAL FLOOR AND ROOF SHEATHING ATTACHMENT

LOW ROOF FRAMING PLAN

SCALE: 3/16" = 1'-0"

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STATE OF ALASKA 49TH PAUL D. ROMESS No. SE13924 REGISTERED PROFESSIONAL ENGINEER EXPIRES: 12/31/21

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No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
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Sheet Contents
STRUCTURAL LOW ROOF FRAMING PLAN

Sheet No.
S102

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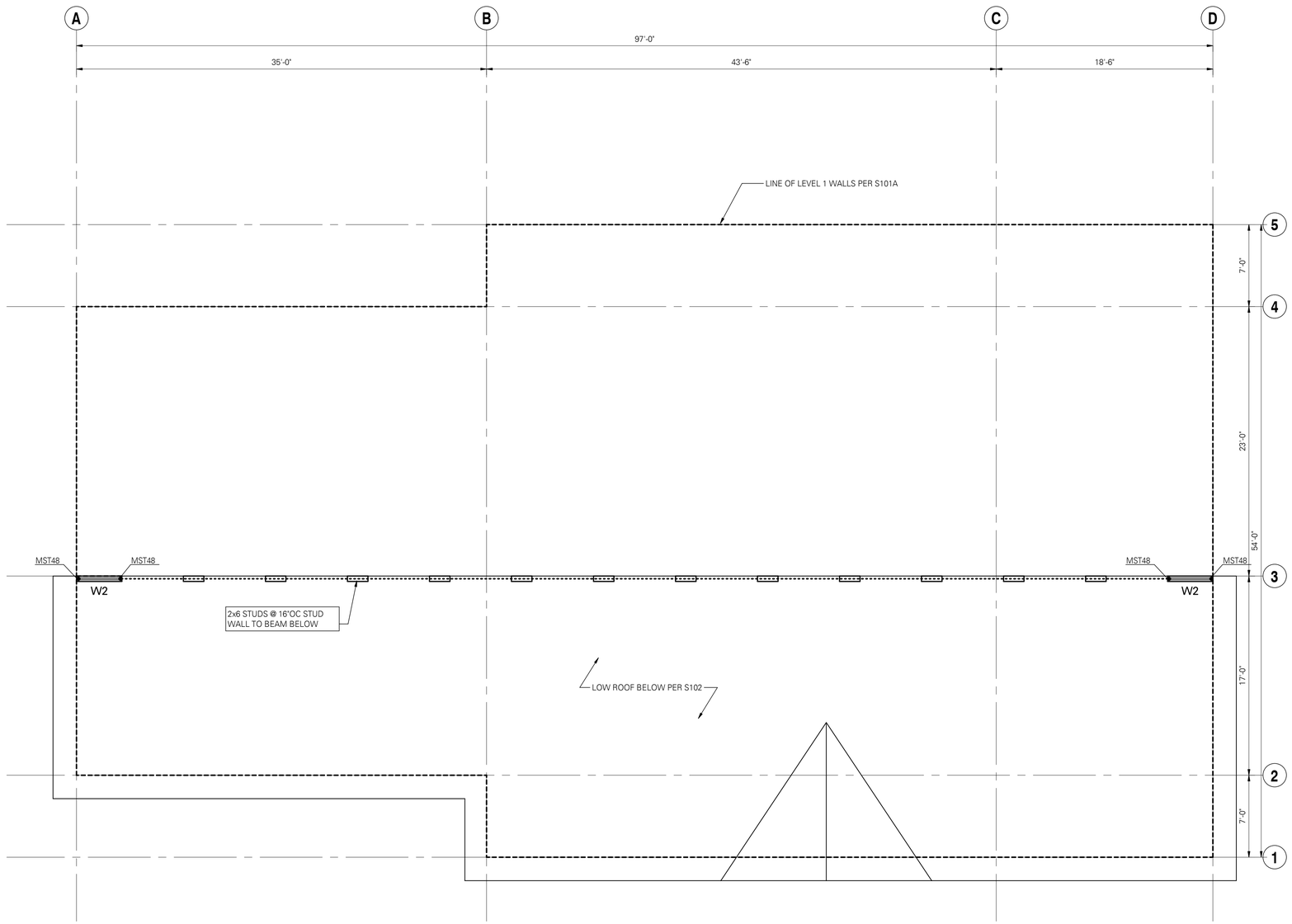

STUD AND SHEAR WALL PLAN NOTES:

1. STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND PER S001 & S002.
2. LUMBER GRADE PER STRUCTURAL GENERAL NOTES.
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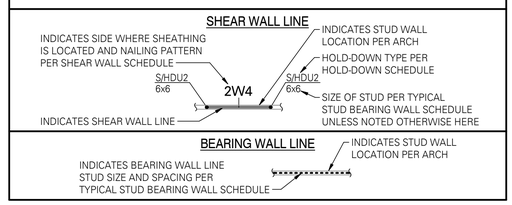

LOW ROOF STUD AND SHEAR WALL PLAN

SCALE: 3/16" = 1'-0"

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TRIBAL COURTHOUSE

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Revisions

No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL LOW ROOF STUD AND SHEAR WALL PLAN

Sheet No.
S102A

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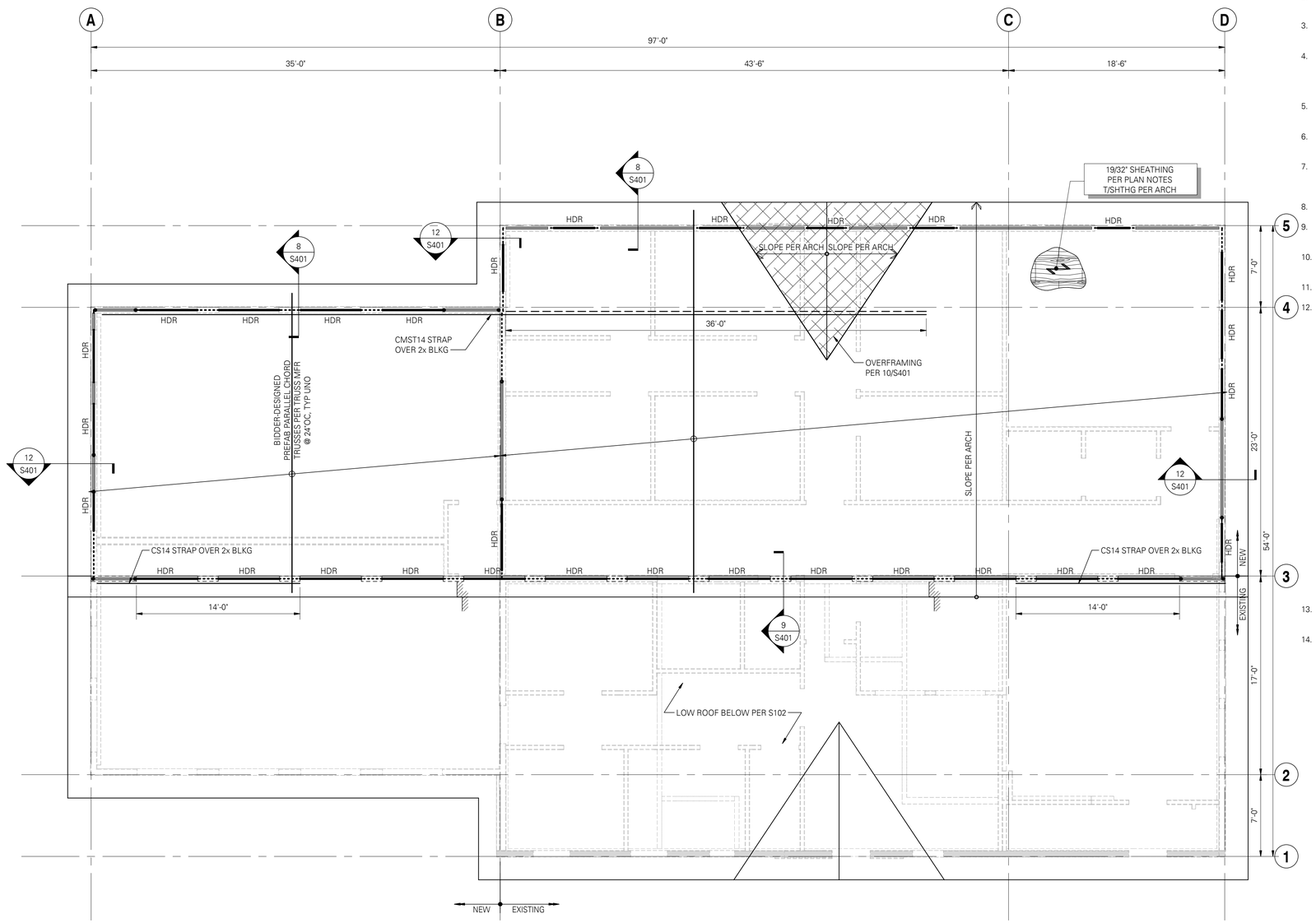

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8. PROVIDE SIMPSON H2.5A TIES AT ALL ROOF TRUSSES TYPICAL.
9. PROVIDE SOLID BLOCKING OVER ALL SHEAR WALLS AND BEARING WALLS. AT SHEAR WALLS PARALLEL TO FRAMING, ALIGN JOIST OR TRUSS OVER SHEAR WALL (ADDITIONAL JOISTS OR TRUSSES MAY BE REQUIRED).
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13. BEARING STUD, SHEAR WALL, HOLD-DOWN, POST SIZE, AND POST CAP AND BASE REQUIREMENTS BELOW PER STUD AND SHEAR WALL PLAN.
14. TYPICAL DETAILS PER:

    3/S401 TYPICAL FLOOR AND ROOF SHEATHING ATTACHMENT

UPPER ROOF FRAMING PLAN

SCALE: 3/16" = 1'-0"

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Sheet Contents
STRUCTURAL UPPER ROOF FRAMING PLAN

Sheet No.
S103

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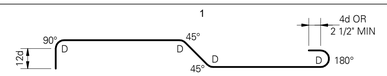
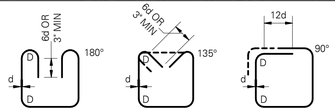
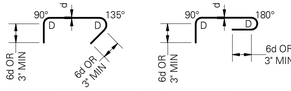


ALL REINFORCING EXCEPT COLUMN TIES AND BEAM STIRRUPS



STIRRUP STIRRUP OR TIE



BEAM OR COLUMN CROSSTIES BEAM STIRRUPS AND COLUMN TIES

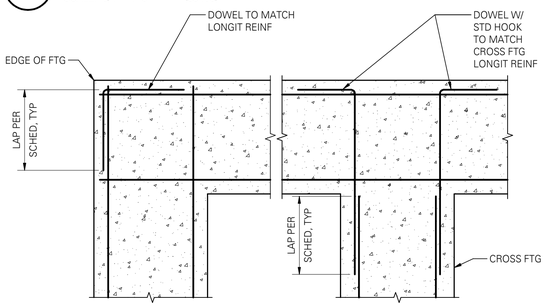
d = BAR DIAMETER, D = BEND DIAMETER

NOTE:

TIES AND CROSSTIES FOR SHEAR WALL BOUNDARY ELEMENTS SHALL BE DETAILED AS COLUMN TIES/CROSSTIES.

1 STANDARD HOOKS AND BENDS

SCALE: 3/4" = 1'-0" (03400)



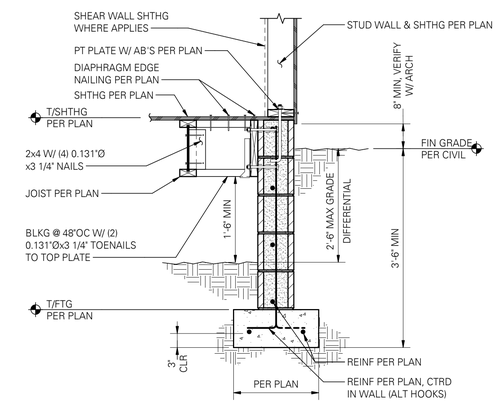
AT CORNERS AT INTERSECTIONS

NOTE:

1. SPLICE LENGTHS PER LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE.
2. FOOTING REINFORCING PER PLAN OR ELEVATIONS, SECTIONS AND DETAILS.

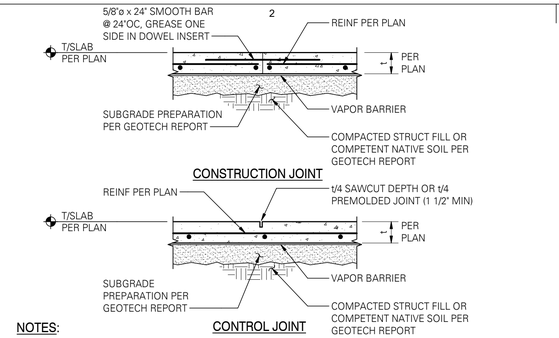
5 PLAN - TYPICAL CORNER REINFORCING AT CONCRETE FOOTINGS

SCALE: 3/4" = 1'-0" (03132)



9 EXTERIOR CRAWL SPACE FOOTING PARALLEL TO JOISTS

SCALE: 3/4" = 1'-0"



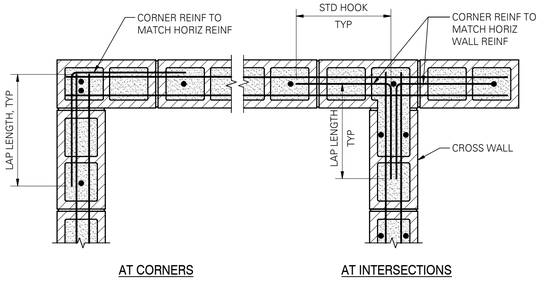
CONTROL JOINT CONTROL JOINT

NOTES:

1. CONSTRUCTION JOINT IS A JOINT BETWEEN DIFFERENT POURS. CONTROL JOINT IS A CRACK CONTROL JOINT WITHIN THE SAME POUR.
2. USE "EARLY ENTRY DRY-CUT SAW" AS SOON AS POSSIBLE WITHOUT CAUSING RAVELING OF CONCRETE EDGES. SAWCUT ALONG SHORT DIRECTION OF POUR FIRST.
3. ALIGN A CONSTRUCTION OR CONTROL JOINT WITH RE-ENTRANT SLAB CORNERS, EACH WAY, TYPICAL.
4. CONSTRUCTION/CONTROL JOINT TO ENCLOSE APPROXIMATE SQUARE AREAS 225 SQUARE FEET MAXIMUM, WITH MAXIMUM PANEL ASPECT RATIO OF 1.3 TO 1.0.
5. CONTRACTOR TO SUBMIT CONSTRUCTION/CONTROL JOINT PLAN TO STRUCTURAL ENGINEER OF RECORD FOR REVIEW/APPROVAL.

2 TYPICAL SLAB ON GRADE JOINT DETAILS WITH REINFORCING

SCALE: 3/4" = 1'-0" (03201M)



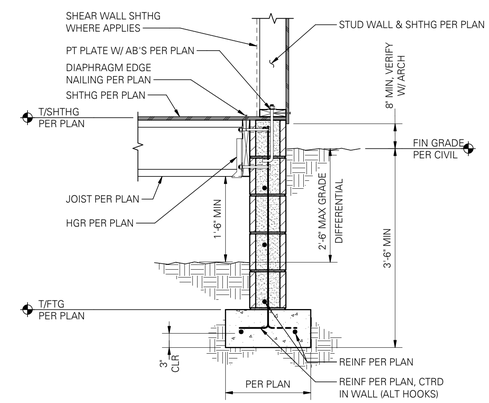
AT CORNERS AT INTERSECTIONS

NOTES:

1. LAP LENGTHS PER REINFORCING LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE FOR CMU.
2. WALL REINFORCING PER PLANS, ELEVATIONS, SECTIONS AND DETAILS.
3. CORNER REINFORCING AT FOOTING AND STEMWALLS TO MATCH FOOTING AND STEMWALL HORIZONTAL REINFORCING.

6 PLAN - TYPICAL CORNER REINFORCING AT CMU WALLS

SCALE: 1" = 1'-0" (04002)



10 EXTERIOR CRAWL SPACE FOOTING PERPENDICUAR TO JOISTS

SCALE: 3/4" = 1'-0"

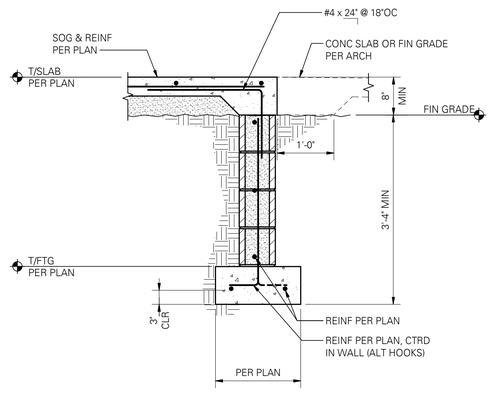
01403A	GRADE 60 REINFORCING				
BAR SIZE	MISCELLANEOUS BARS		TOP BARS (see note #3)		HOOKED BARS
	Ld	Splice	Ld	Splice	Ldh
f'c = 3000psi					
#3	17	22	22	28	9
#4	22	29	29	38	11
#5	28	36	36	47	14
#6	33	43	43	56	17
#7	48	63	63	81	20
#8	55	72	72	93	22
#9	62	81	81	105	25
#10	70	91	91	118	28
#11	78	101	101	131	31
#14	93	N/A	121	N/A	38
#18	124	N/A	161	N/A	50

NOTES:

1. ALL TABULATED VALUES ARE IN INCHES.
2. VALUES FOR UNCOATED REINFORCING AND NORMAL WEIGHT CONCRETE WITH CLEAR SPACING > db, CLEAR COVER > db AND MINIMUM STIRRUPS OR TIES THROUGHOUT Ld OR CLEAR SPACING > 2db AND CLEAR COVER > db.
3. TOP REINFORCING = HORIZONTAL REINFORCING WITH MORE THAN 12" OF FRESH CONCRETE BELOW OR AS NOTED ON DOCUMENTS AS "TOP BAR".

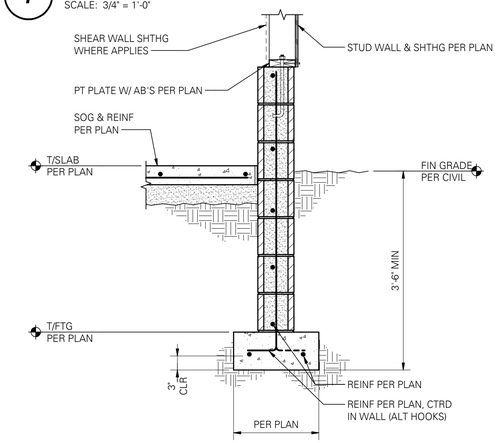
3 LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE

SCALE: 3/4" = 1'-0" (01403A)



7 CONCRETE SLAB AND STEMWALL AT DOOR OPENING

SCALE: 3/4" = 1'-0"



11 EXTERIOR FOOTING AND STEMWALL AT STUD WALL

SCALE: 3/4" = 1'-0"

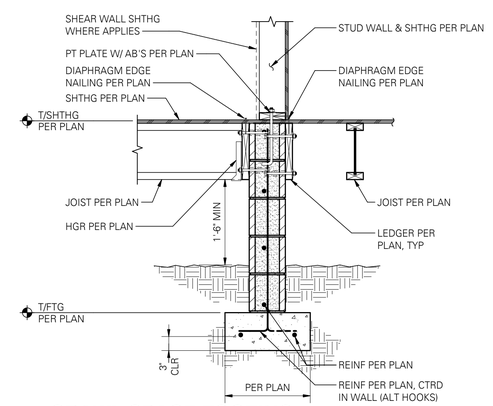
REINFORCING SIZE	GRADE 40	GRADE 60
#4	20	24
#5	25	30
#6	30	36
#7	35	42
#8	40	48

NOTES:

1. DEVELOPMENT AND LAP SPLICE LENGTHS INDICATED SHALL BE USED NOTED OTHERWISE ON DRAWINGS.
2. REINFORCING MAY BE CONSIDERED TO BE SPLICED WHEN IN CONTACT OR WHEN BARS ARE IN ADJACENT GROUTED CELLS AND ARE SPACED NO FARTHER APART THAN 1/5 THE REQUIRED LAP LENGTH INDICATED AND NEVER FURTHER APART THAN 8".
3. ALL TABULATED VALUES ARE IN INCHES.

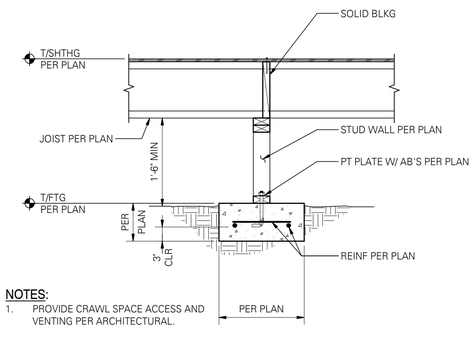
4 TYPICAL LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE FOR STRUCTURAL MASONRY

SCALE: 1" = 1'-0"



8 CRAWL SPACE FOOTING PARALLEL/PERPENDICULAR TO JOISTS

SCALE: 3/4" = 1'-0"



NOTES:

1. PROVIDE CRAWL SPACE ACCESS AND VENTING PER ARCHITECTURAL.
2. AT SIM, JOIST CONNECTION PER 7/S401.

12 INTERIOR CRAWL SPACE FOOTING PERPENDICULAR TO JOISTS WITH PONY WALL

SCALE: 3/4" = 1'-0" (03062M)

FOR PERMIT

These drawings are sufficiently complete for submission to the jurisdiction having authority for permit. The Contractor shall not use these drawings for construction until Contractor receives written approval for use in construction by the jurisdiction having authority and DCI Engineers.

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STATE OF ALASKA — PAUL D. ROMESS — No. SE13924 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 12/31/21

KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by	Date
JSS	15 JULY 2021
Checked	DCI Job No.
PR	21101-0041

Sheet Contents
STRUCTURAL FOUNDATION DETAILS

Sheet No.
S201

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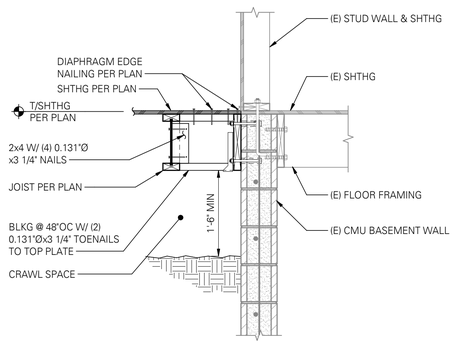
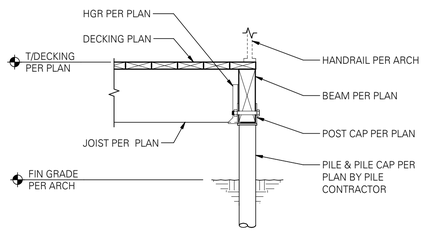


10 **JOISTS PARALLEL TO EXISTING BASEMENT WALL**
SCALE: 3/4" = 1'-0"



11 **SECTION AT DECK FRAMING**
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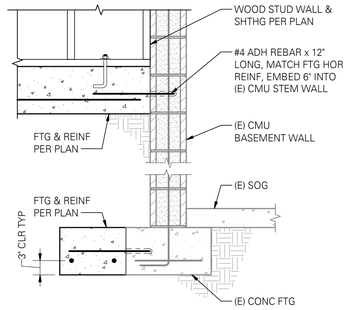

12 **SECTION AT EXISTING FOOTING**
SCALE: 3/4" = 1'-0"

FOR PERMIT
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STATE OF ALASKA 49TH
PAUL D. ROGNESS No. SE13924
REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 12/31/21

KENAITZE INDIAN TRIBE
TRIBAL COURTHOUSE
508 UPLAND AVE. KENAI, ALASKA

Revisions

No.	Description	Date

Drawn by JSS	Date 15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL FOUNDATION DETAILS

Sheet No.
S202

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Plot Date Time: 7/15/2021 4:13:31 PM

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01431

SHEAR WALL SCHEDULE W6 FOR 0.131"Ø x 2 1/2" NAILS IN HEM-FIR LARCH (2015 IBC) [17]

SOME SHEAR WALL TYPES NOTED MAY NOT BE USED ON THIS PROJECT.

WALL TYPE	WALL SHEATHING APA-RATED [1, 2, 12, 13]	NAIL SIZE & SPACING AT ALL PANEL EDGES [4, 5]	BLOCKING & STUD SIZE AT ADJOINING PANEL EDGES [3, 6, 14]	RIM JOIST OR BLOCKING CONN TO TOP PLATE BELOW [7, 8]	2x PLATE ATTACHMENT NAILING TO WOOD RIM JOIST OR BLOCKING BELOW	SILL PLATE ATTACHMENT ANCHOR BOLT TO CONCRETE BELOW [10]	SILL PLATE ATTACHMENT SILL PLATE AT FOUNDATION [11]	SHEAR CAPACITY LBS/FT
W6	15/32"	0.131"Ø x2 1/2" @ 6"OC	2x	CLIP @ 16"OC	0.148"Ø x3 1/4" @ 8"OC	5/8"Ø @ 48"OC	2x	240
W4	15/32"	0.131"Ø x2 1/2" @ 4"OC	2x	CLIP @ 16"OC	0.148"Ø x3 1/4" @ 4"OC	5/8"Ø @ 48"OC	2x	350
W3	15/32"	0.131"Ø x2 1/2" @ 3"OC STAGGERED	3x	CLIP @ 12"OC	0.148"Ø x3 1/4" @ 4"OC	5/8"Ø @ 32"OC	2x	455
W2	15/32"	0.131"Ø x2 1/2" @ 2"OC STAGGERED	3x	CLIP @ 16"OC EACH SIDE	0.148"Ø x3 1/4" @ 6"OC (2) ROWS [9]	5/8"Ø @ 24"OC 5/8"Ø @ 32"OC	2x 3x [16]	595
2W4	15/32" BOTH SIDES	0.131"Ø x2 1/2" @ 4"OC STAGGERED	3x	CLIP @ 16"OC EACH SIDE	0.148"Ø x3 1/4" @ 4"OC (2) ROWS [9]	5/8"Ø @ 24"OC	3x [16]	705
2W3	15/32" BOTH SIDES	0.131"Ø x2 1/2" @ 3"OC STAGGERED	3x	CLIP @ 12"OC EACH SIDE	0.148"Ø x3 1/4" @ 4"OC (2) ROWS [9]	5/8"Ø @ 16"OC	3x [16]	910
2W2	15/32" BOTH SIDES	0.131"Ø x2 1/2" @ 2"OC STAGGERED	3x	CLIP @ 8"OC EACH SIDE	0.148"Ø x3 1/4" @ 3"OC (2) ROWS [9] OR (2) ROWS OF SDWH0.195x4 SCREWS @ 8"OC [9]	5/8"Ø @ 16"OC	3x [16]	1190

NOTES:

[1] INSTALL PANELS EITHER HORIZONTALLY OR VERTICALLY.

[2] WHERE SHEATHING IS APPLIED ON BOTH SIDES OF WALL, PANEL EDGE JOINTS ON 2x FRAMING SHALL BE STAGGERED SO THAT JOINTS ON THE OPPOSITE SIDES ARE NOT LOCATED ON THE SAME STUD.

[3] BLOCKING IS REQUIRED AT ALL PANEL EDGES.

[4] PROVIDE SHEAR WALL SHEATHING AND NAILING FOR THE ENTIRE LENGTH OF THE WALLS INDICATED ON THE PLANS. ENDS OF FULL HEIGHT WALLS ARE DESIGNATED BY WINDOWS OR DOORWAYS OR AS DESIGNATED ON PLANS. HOLD-DOWN REQUIREMENTS PER PLANS. (ALTERNATE NOTE: WALLS SHOWN WITH HORIZONTAL STRAPS BELOW AND/OR ABOVE OPENINGS REQUIRE SHEATHING, SHEAR WALL NAILING, ETC ABOVE AND BELOW ALL OPENINGS).

[5] SHEATHING EDGE NAILING IS REQUIRED AT ALL HOLD-DOWN POSTS. EDGE NAILING MAY ALSO BE REQUIRED TO EACH STUD USED IN BUILT-UP HOLD-DOWN POSTS. ADDITIONAL INFORMATION PER HOLD-DOWN DETAILS.

[6] INTERMEDIATE FRAMING TO BE 2x MINIMUM MEMBERS. ATTACH SHEATHING TO INTERMEDIATE FRAMING WITH 0.131"Ø x2 1/2" NAILS AT 12"OC WHERE STUDS ARE SPACED AT 16"OC AND 0.131"Ø x2 1/2" NAILS AT 6"OC WHERE STUDS ARE SPACED AT 24"OC.

[7] BASED ON 0.131"Ø x1 1/2" NAILS USED TO ATTACH FRAMING CLIPS DIRECTLY TO FRAMING. USE 0.131"Ø x2 1/2" NAILS WHERE INSTALLED OVER SHEATHING.

[8] FRAMING CLIPS: A35 OR LTP5 OR APPROVED EQUIVALENT.

[9] WHERE BOTTOM PLATE ATTACHMENT SPECIFIES (2) ROWS OF NAILS OR SCREWS, PROVIDE DOUBLE JOIST, RIM JOIST OR EQUAL BELOW. STAGGER NAILS/SCREWS IN ROWS 1 1/2" APART MINIMUM.

[10] ANCHOR BOLTS SHALL BE PROVIDED WITH HOT-DIPPED GALVANIZED STEEL PLATE WASHERS 0.229"x3"x3" MINIMUM. THE HOLE IN THE PLATE WASHER MAY BE DIAGONALLY SLOTTED 13/16"x1 3/4" PROVIDED A STANDARD CUT WASHER IS PLACED BETWEEN THE PLATE WASHER AND NUT. PLATE WASHER TO EXTEND TO WITHIN 1/2" OF THE EDGE OF THE SILL PLATE ON THE SIDE(S) WITH SHEATHING. AT 2x6 WALLS WITH SHEATHING ON BOTH SIDES USE PLATE WASHER 0.229"x4 1/2"x4 1/2" MINIMUM. EMBED ANCHOR BOLTS 7" MINIMUM INTO THE CONCRETE. USE 5/8"Ø ADH ANCHOR BOLTS WITH 7" MINIMUM EMBEDMENT INTO (E) CMU STEMWALL WHERE REQUIRED PER PLAN.

[11] PRESSURE TREATED MATERIAL CAN CAUSE EXCESSIVE CORROSION IN THE FASTENERS. PROVIDE HOT-DIPPED GALVANIZED (ELECTRO-PLATING IS NOT ACCEPTABLE) NAILS AND CONNECTOR PLATES (FRAMING ANGLES, ETC) FOR ALL CONNECTORS IN CONTACT WITH PRESSURE TREATED FRAMING MEMBERS. ADDITIONAL INFORMATION PER STRUCTURAL GENERAL NOTES.

[12] 7/16" APA-RATED SHEATHING (OSB) MAY BE USED IN PLACE OF 15/32" SHEATHING PROVIDED THAT ALL STUDS ARE SPACED AT 16"OC MAXIMUM.

[13] WHERE WOOD SHEATHING (W) IS APPLIED OVER GYPSUM SHEATHING (G), CONTACT THE ENGINEER OF RECORD FOR ALTERNATE NAILING REQUIREMENTS.

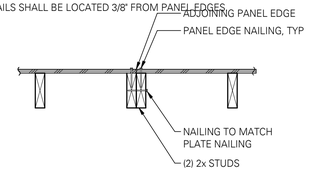
[14] AT ADJOINING PANEL EDGES, (2) 2x STUDS NAILED TOGETHER MAY BE USED IN PLACE OF SINGLE 3x STUD. DOUBLE 2x STUDS SHALL BE CONNECTED TOGETHER BY NAILING THE STUDS TOGETHER WITH 3" LONG NAILS OF THE SAME SPACING AND DIAMETER AS THE PLATE NAILING, PER SECTION.

[15] CONTACT THE STRUCTURAL ENGINEER OF RECORD FOR ADHESIVE OR EXPANSION BOLT ALTERNATIVES TO CAST-IN-PLACE ANCHOR BOLTS. SPECIAL INSPECTION MAY BE REQUIRED.

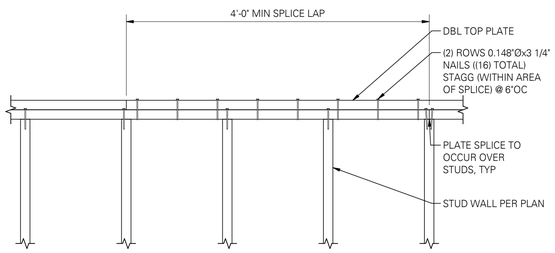
[16] NAIL STUDS TO 3x SILL PLATES WITH EITHER (2) 0.148"Ø x4" END NAILS OR (4) 0.131"Ø x2 1/2" TOENAILS.

[17] WX
WHERE "W" INDICATES WOOD SHEATHING AND "X" INDICATES EDGE NAIL SPACING.

[18] EDGE NAILS SHALL BE LOCATED 3/8" FROM PANEL EDGES



PLAN

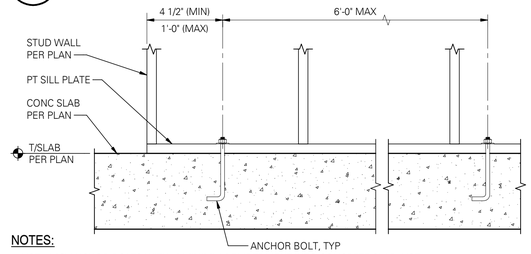


NOTE:

FLOOR/ROOF JOISTS NOT SHOWN FOR CLARITY.

3 TYPICAL PLATE SPLICE DETAIL

SCALE: 1" = 1'-0" (06904)



NOTES:

1. USE 5/8"Ø ANCHOR BOLTS WITH 7" MINIMUM EMBEDMENT INTO CONCRETE SLAB. USE 5/8"Ø ADH ANCHOR BOLTS WITH 7" MINIMUM EMBEDMENT INTO (E) CMU STEMWALL WHERE REQUIRED PER PLAN.

2. EACH SILL PLATE PIECE SHALL HAVE (2) BOLTS MINIMUM. HOLD-DOWN ANCHORS ARE NOT TO BE CONSIDERED AN ANCHOR BOLT.

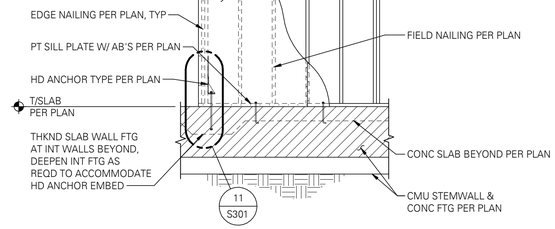
3. LOCATE BOLTS WITHIN 1'-0" OF SILL PLATE PIECE ENDS AND AT 6'-0"OC MAXIMUM.

4. USE PLATE WASHER PER SHEAR WALL SCHEDULE AT EACH BOLT. STANDARD CUT WASHERS ARE ACCEPTABLE AT NON-SHEAR WALLS.

5. DO NOT DRILL OVERSIZE HOLES THRU SILL PLATE. USE 11/16"Ø DRILL BIT.

6. SILL PLATE THICKNESS AND FASTENING AT SHEAR WALLS PER SHEAR WALL SCHEDULE.

7. CONTACT THE ENGINEER-OF-RECORD FOR POST INSTALLED ANCHOR OPTIONS.



5 SHEAR WALL SCHEDULE - HEM-FIR

SCALE: 1" = 1'-0" (01431)

01420A

HOLD-DOWN/STRAP SCHEDULE - HEM-FIR STUDS

[1, 2, 7, 11] INDICATES FOOTNOTES

	TYPE	NUMBER OF STUDS/POST [3, 12]	NAILS, SCREWS OR BOLTS	ANCHOR [4] DIAMETER [10]	CONCRETE/CMU EMBEDMENT/CAPACITY CMU STEMWALL [5] EMBED CMU [6, 14]	CAPACITY	FOOTING EMBED CIP [6]	CAPACITY	NOTES
CONCRETE/CMU TO WOOD	HDU2	(2) 2x	(6) SDS1/4x2 1/2	5/8"Ø	12"	2.22k	8"	2.22k	----
	HDU4	(2) 2x	(10) SDS1/4x2 1/2	5/8"Ø	12"	3.3k	8"	3.3k	----
	HDU5	(2) 2x	(14) SDS1/4x2 1/2	5/8"Ø	18"	4.1k	8"	4.1k	----
	HDU8	(3) 2x	(20) SDS1/4x2 1/2	7/8"Ø	18"	5.7k	10"	5.7k	----
	HDU11	(1) 4x6 OR (1) 6x	(30) SDS1/4x2 1/2	1"Ø	26"	6.9k	12"	6.9k	----
	HDU14	(1) 6x	(36) SDS1/4x2 1/2	1"Ø	26"	7.8k	12"	10.4k	----
	HD12	(1) 6x6	(4) 1"Ø	1 1/8"Ø	34"	8.6k	15"	12.7k	----
	HD19	(1) 6x6	(5) 1"Ø	1 1/4"Ø	34"	9.5k	15"	16.2k	----
WOOD TO WOOD	CS16	(1) 2x	(22) 0.148"Øx3" NAILS	----	----	----	----	1.7k	[9]
	CS14	(2) 2x	(30) 0.148"Øx3" NAILS	----	----	----	----	2.5k	[9]
	MST48	(2) 2x	(32) 0.162"Øx3 1/2" NAILS	----	----	----	----	3.4k	[8, 9]
	MST60	(2) 2x	(46) 0.162"Øx3 1/2" NAILS	----	----	----	----	5.4k	[8, 9]
	CMST14	(2) 2x	(76) 0.148"Øx3" NAILS	----	----	----	----	6.5k	[9]
	CMST12	(2) 2x	(98) 0.148"Øx3" NAILS	----	----	----	----	9.22k	[9]

NOTES:

[1] SOME HOLD-DOWN TYPES MAY NOT BE USED ON THIS PROJECT.

[2] TYPICAL HOLD-DOWN DETAILS PER 11/S301. ANCHOR REINFORCEMENT REQUIRED AT STEMWALLS.

[3] PROVIDE PANEL EDGE NAILING PER SHEAR WALL SCHEDULE AT HOLD-DOWN STUDS/POSTS.

[4] BASED ON MINIMUM f'c = 3000 PSI CONCRETE.

[5] STEMWALLS SHALL BE 8" WIDE x 18" TALL MINIMUM.

[6] CAST-IN-PLACE (CIP) TYPE THREADED RODS AT HOLD-DOWNS SHALL HAVE TWO HEX HEAD NUTS WITH OVERSIZED WASHERS.

[7] INCLUDES 1.6 LOAD DURATION INCREASE FOR WOOD.

[8] BASED ON 11 7/8" DEEP FLOOR JOIST.

[9] TOTAL NAILS SPECIFIED, USE HALF THE NAILS AT THE STUDS ABOVE AND BELOW LEVEL BEING CONNECTED.

[10] AT PRESSURE TREATED SILLS, USE HOT DIPPED GALVANIZED BOLTS.

[11] POST INSTALLED HOLD-DOWN OPTIONS MAY BE AVAILABLE AT SOME CONDITIONS. CONTACT ENGINEER OF RECORD PRIOR TO CONSTRUCTION.

[12] NAIL LAMINATE MULTIPLE 2x STUDS WITH PLATE NAILING PER SHEAR WALL SCHEDULE.

[13] MIDWALL/CORNER
WALL END

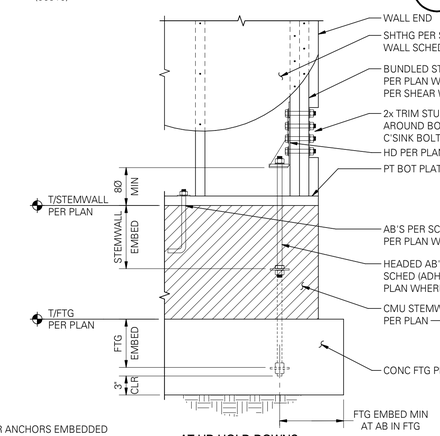
[14] STUD WALLS SHALL BE 2x6, CENTER HOLD-DOWN IN STUD WALL.

9 HOLD-DOWN/STRAP SCHEDULE - HEM-FIR STUDS

SCALE: 1" = 1'-0" (01420A)

7 TYPICAL SILL PLATE ANCHORAGE TO CONCRETE

SCALE: 1" = 1'-0" (06910)



NOTES:

1. MINIMUM FOOTING SIZE FOR ANCHORS EMBEDDED INTO FOOTING IS 2x EMBED SQUARE WITH DEPTH AS INDICATED.

8 TYPICAL SHEAR WALL ELEVATION

SCALE: 1" = 1'-0" (06090)

11 TYPICAL HOLD-DOWN AT FOUNDATION - CMU STEMWALL

SCALE: 1" = 1'-0" (06091M)

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Revisions		
No.	Description	Date

Drawn by	Date
JSS	15 JULY 2021
Checked PR	DCI Job No. 21101-0041

Sheet Contents
STRUCTURAL STUD AND SHEAR WALL DETAILS

Sheet No.
S301

Plot Date Time: 7/15/2021 4:13:00 PM
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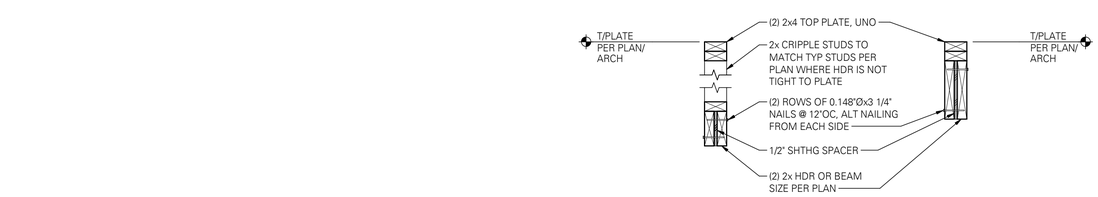
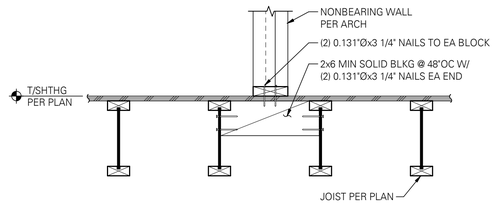
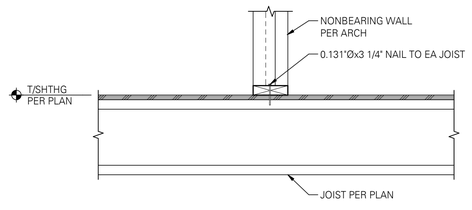


AT 2x4 WALLS



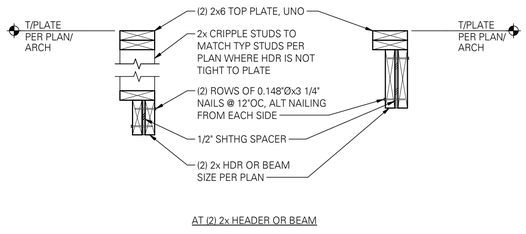
WALL PARALLEL TO FLOOR FRAMING



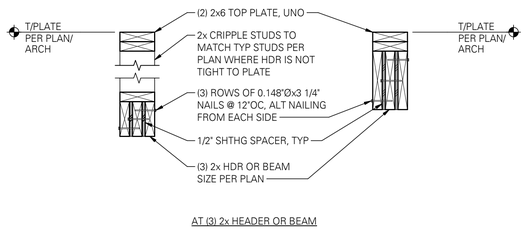
WALL PERPENDICULAR TO FLOOR FRAMING

9 NON-STRUCTURAL PARTITION WALL CONNECTION

SCALE: 1" = 1'-0" (06906M)



AT (2) 2x HEADER OR BEAM

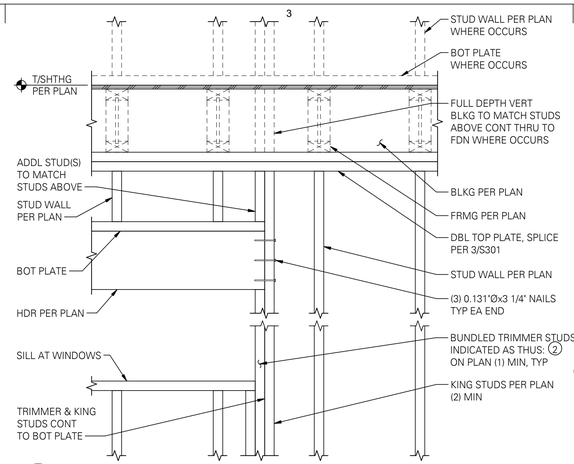


AT (3) 2x HEADER OR BEAM

AT 2x6 WALLS

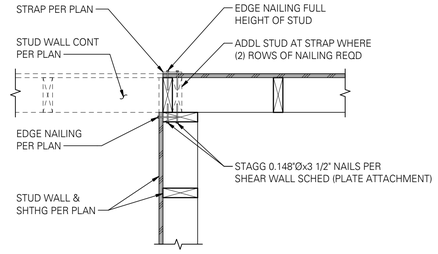
10 TYPICAL BUILT-UP 2x HEADER OR BEAM

SCALE: 1" = 1'-0" (06212)

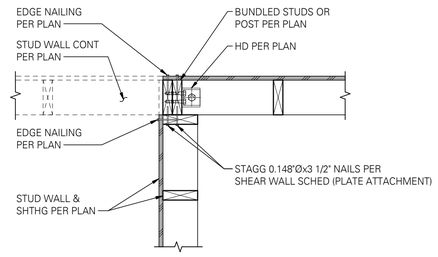


3 TYPICAL HEADER

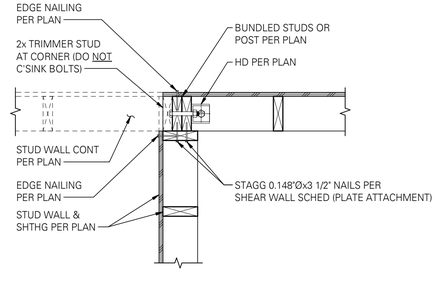
SCALE: 1" = 1'-0" (06211)



WITH OR WITHOUT STRAP TIE



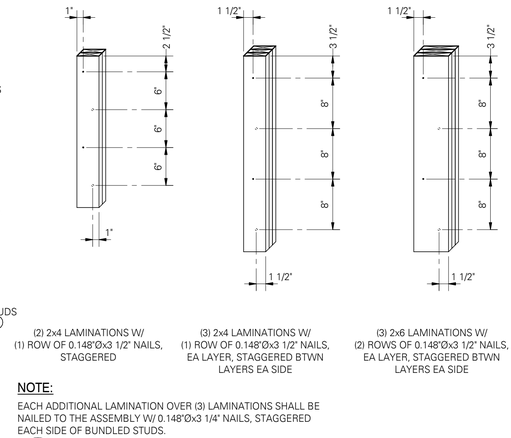
HDU HOLD-DOWNS



HD HOLD-DOWNS

11 PLAN - INTERSECTING SHEAR WALLS

SCALE: 1" = 1'-0" (06110)



(2) 2x4 LAMINATIONS W/ (1) ROW OF 0.148"Ø x3 1/2" NAILS, STAGGERED

(3) 2x4 LAMINATIONS W/ (1) ROW OF 0.148"Ø x3 1/2" NAILS, EA LAYER, STAGGERED BTWN LAYERS EA SIDE

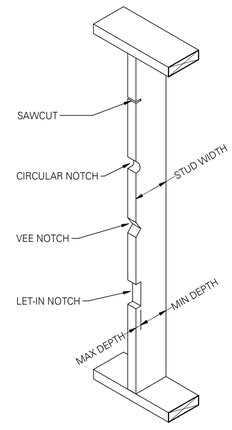
(3) 2x6 LAMINATIONS W/ (2) ROWS OF 0.148"Ø x3 1/2" NAILS, EA LAYER, STAGGERED BTWN LAYERS EA SIDE

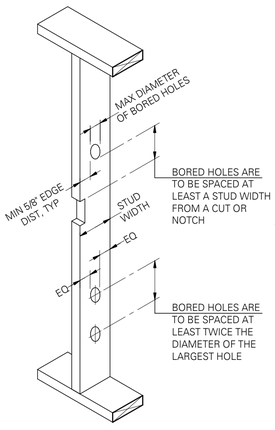
NOTE:

EACH ADDITIONAL LAMINATION OVER (3) LAMINATIONS SHALL BE NAILED TO THE ASSEMBLY W/ 0.148"Ø x3 1/4" NAILS, STAGGERED EACH SIDE OF BUNDLED STUDS.

4 TYPICAL NAILING FOR BUNDLED STUDS

SCALE: 1" = 1'-0" (06914)





BEARING WALL STUDS		
STUD SIZE	MAX DEPTH OF EDGE CUT OR NOTCH	MIN DEPTH REMAINING AFTER CUT OR NOTCH
2x4	7/8"	2 5/8"
2x6	1 3/8"	4 1/8"

BEARING WALL STUDS		
STUD SIZE	MAX DIAMETER OF BORED HOLE	MIN DEPTH REMAINING AFTER BORED HOLE
2x4	1 3/8"	5/8" EA SIDE OF HOLE
2x6	2 3/16"	5/8" EA SIDE OF HOLE

NOTE:
STUDS MAY NOT BE BORED IN EXCESS OF 40% OF THE STUD, IF STUDS ARE DOUBLED, BORINGS MAY BE INCREASED TO 60% OF STUD WIDTH PROVIDED NOT MORE THAN (2) SUCCESSIVE STUDS ARE BORED. BORINGS SHALL NOT BE MADE AT THE SAME SECTION WHERE CUT OR NOTCH HAS BEEN MADE.

NON-BEARING WALL STUDS		
STUD SIZE	MAX DEPTH OF EDGE CUT OR NOTCH	MIN DEPTH REMAINING AFTER CUT OR NOTCH
2x4	1 3/8"	2 1/8"
2x6	2 3/16"	3 3/8"

NON-BEARING WALL STUDS		
STUD SIZE	MAX DIAMETER OF BORED HOLE	MIN DEPTH REMAINING AFTER BORED HOLE
2x4	2 1/16"	5/8" EA SIDE OF HOLE
2x6	3 1/4"	5/8" EA SIDE OF HOLE

NOTE:
STUDS MAY NOT BE BORED IN EXCESS OF 60% OF THE STUD. BORINGS SHALL NOT BE MADE AT THE SAME SECTION WHERE CUT OR NOTCH HAS BEEN MADE.

CUTTING AND NOTCHING WOOD STUDS

NOTE:
DO NOT NOTCH MORE THAN THREE ADJACENT STUDS WITHOUT REVIEW BY ENGINEER.

BORED HOLES IN WOOD STUDS

NOTE:
BORED HOLE NOT PERMITTED IN MORE THAN THREE ADJACENT STUDS WITHOUT REVIEW BY ENGINEER.

12 TYPICAL HOLES & NOTCHES IN WOOD STUDS

SCALE: 1" = 1'-0" (06908)

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No.	Description	Date

Drawn by	Date
JSS	15 JULY 2021
Checked	DCI Job No.
PR	21101-0041

Sheet Contents
STRUCTURAL STUD AND SHEAR WALL DETAILS

Sheet No.
S302

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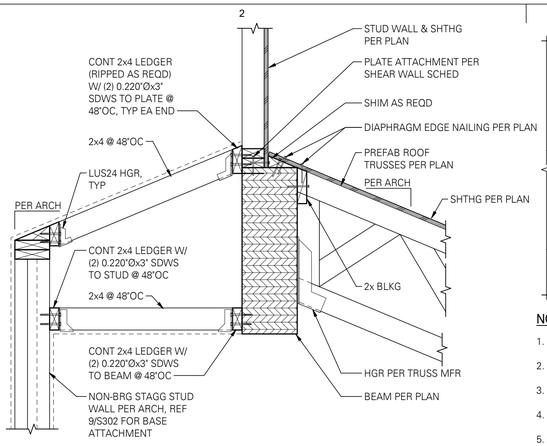
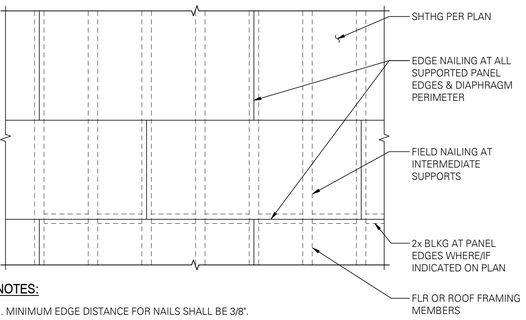


2 INTERIOR WALL PERPENDICULAR TO SLOPED ROOF TRUSSES AT BEAM WITH SOFFIT

SCALE: 1" = 1'-0" (06076M)

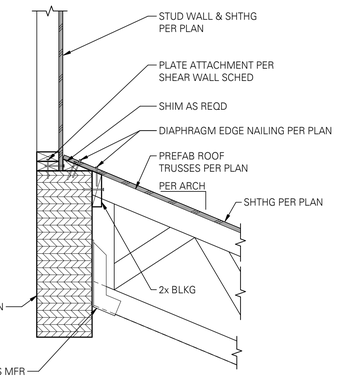


NOTES:

1. MINIMUM EDGE DISTANCE FOR NAILS SHALL BE 3/8".
2. MINIMUM SHEATHING SHEET SIZE SHALL BE 24"x48".
3. NAILS SHALL NOT BE OVERDRIVEN.
4. NAILS SHALL BE COMMON WIRE TYPE OR APPROVED EQUAL.
5. ADDITIONAL INFORMATION PER STRUCTURAL GENERAL NOTES.

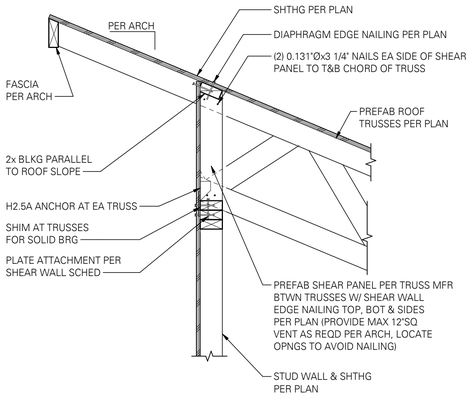
3 PLAN - TYPICAL FLOOR AND ROOF SHEATHING ATTACHMENT

SCALE: 1" = 1'-0" (06230)



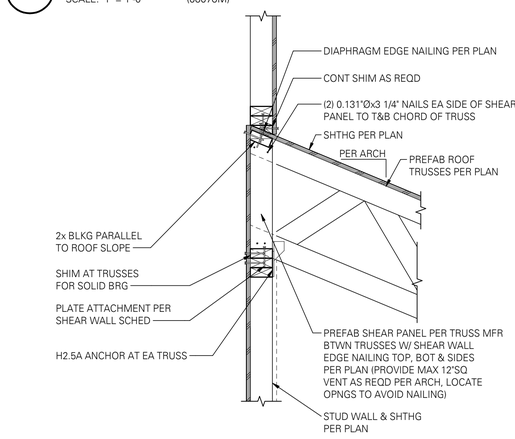
5 INTERIOR WALL PERPENDICULAR TO SLOPED ROOF TRUSSES AT BEAM

SCALE: 1" = 1'-0" (06076M)



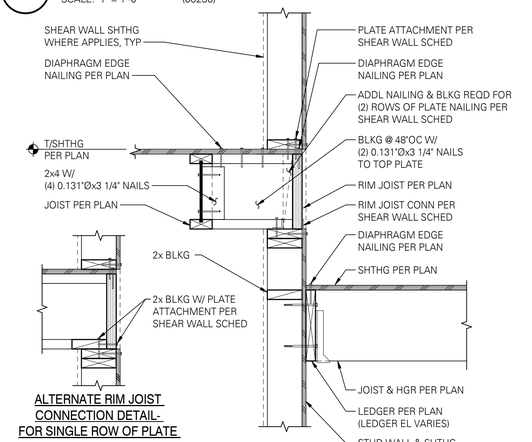
9 INTERIOR WALL PERPENDICULAR TO SLOPED ROOF TRUSSES

SCALE: 1" = 1'-0" (06076M)



6 INTERIOR WALL PERPENDICULAR TO SLOPED ROOF TRUSSES

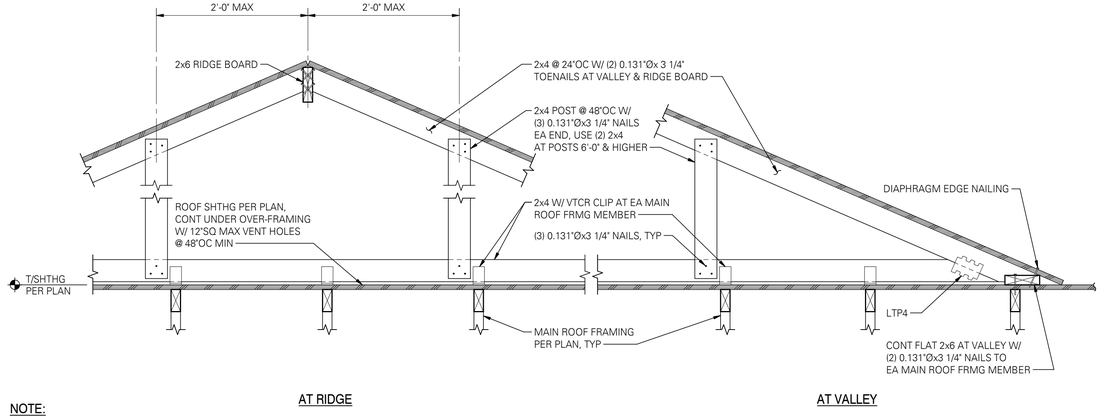
SCALE: 1" = 1'-0" (06076M)



ALTERNATE RIM JOIST CONNECTION DETAIL- FOR SINGLE ROW OF PLATE NAILING/BLOCKING ONLY

7 WALL PARALLEL TO FLOOR JOISTS AT RAMP

SCALE: 1" = 1'-0" (06001M)



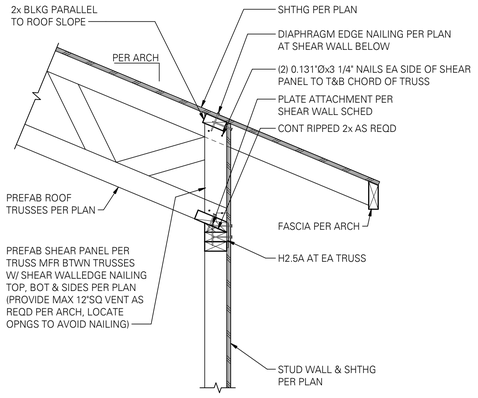
AT RIDGE AT VALLEY

NOTE:

AT CONTRACTOR'S OPTION, TRUSSES MAY BE USED IN LIEU OF 2x FRAMING SHOWN.

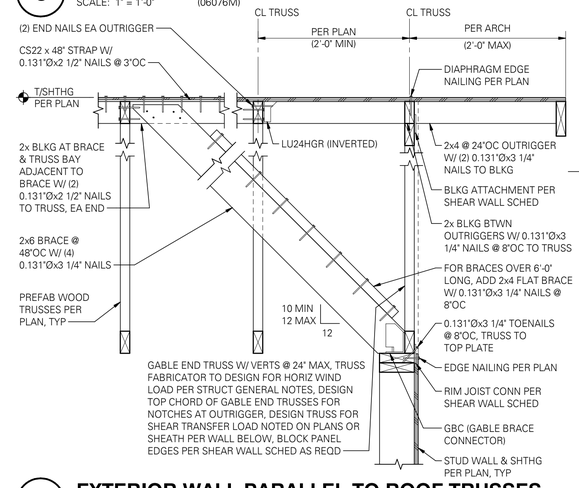
10 STANDARD ROOF OVER-FRAMING

SCALE: 1" = 1'-0" (06900)



8 EXTERIOR WALL PERPENDICULAR TO SLOPED ROOF TRUSSES

SCALE: 1" = 1'-0" (06076M)



12 EXTERIOR WALL PARALLEL TO ROOF TRUSSES

SCALE: 1" = 1'-0" (06064M)

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PAUL D. ROMESS
No. SE13924
EXPIRES: 12/31/21

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Checked	DCI Job No.
PR	21101-0041

Sheet Contents
STRUCTURAL FRAMING DETAILS

Sheet No.
S401

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Plot Date Time: 7/15/2021 4:13:13 PM

MECHANICAL LEGEND

- DENOTES DEMOLITION
- WASTE
- VENT PIPING
- COLD WATER
- HOT WATER
- HOT WATER RECIRCULATED
- XXX — SEE ABBREVIATIONS FOR MEDIA
- PIPE UP
- PIPE DOWN
- TEE UP
- TEE DOWN
- CAP
- UNION
- DIRECTION OF FLOW
- BALL VALVE
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- CHECK VALVE
- BALANCE/SHUT-OFF VALVE
- PRESSURE REDUCING VALVE
- FLEXIBLE PIPING CONNECTOR
- PRESS/TEMP RELIEF VALVE
- HOSE BIBB
- PUMP
- CLEANOUT
- PIPE GUIDE
- PIPE ANCHOR
- THERMOMETER
- PRESS GAUGE W/ ISOLATION COCK
- STRAINER W/ BLOWDOWN
- FLOOR CLEANOUT
- FLOOR DRAIN
- FLOOR SINK
- POINT OF CONNECTION

- SUPPLY AIR UP & DOWN (SQUARE)
  SUPPLY AIR DIFFUSER / GRILLE
- RETURN AIR UP & DOWN (SQUARE)
  RETURN AIR GRILLE
- EXHAUST AIR UP & DOWN (SQUARE)
  EXHAUST AIR GRILLE
- ROUND DUCT UP & DOWN
- VOLUME DAMPER
- MOTORIZED CONTROL DAMPER
- SOUND LINED DUCTWORK
- 24/12 — DUCT SIZE
  (FIRST NUMBER – SIDE SHOWN)
  (SECOND NUMBER – SIDE NOT SHOWN)
- INSULATED DUCTWORK
- TURNING VANES
- FLEXIBLE DUCT CONNECTION
- FD — FIRE DAMPER
- FSD — FIRE SMOKE DAMPER
- DIFFUSER W/ FLEXIBLE DUCT
- THERMOSTAT OR SENSOR
- 1 / M1 — DETAIL NUMBER
  SHEET LOCATED ON
- 1 — SHEET NOTES
- SA:XX — CFM
  DIFFUSER OR GRILLE TYPE
- BB-1 / XX | XX' — BASEBOARD TAG
  LENGTH OF FINTUBE
  GPM

ABBREVIATIONS

A	COMPRESSED AIR	ESP	EXTERNAL STATIC PRESSURE	NTS	NOT TO SCALE
AAV	AUTOMATIC AIR VENT	EXIST.,(E)	EXISTING	OC	ON CENTER
ABV	AUTOMATIC BALANCE VALVE	FT	FEET	O/A	OUTSIDE AIR
AD	ACCESS DOOR	FPM	FEET PER MINUTE	OD	OUTSIDE DIAMETER
AF	AIR FOIL	FPF	FINS PER FOOT	P	PROPANE
AFF	ABOVE FINISHED FLOOR	FC	FORWARD CURVE	PD	PRESSURE DROP
AHU	AIR HANDLING UNIT	F	FAHRENHEIT	PG	PROPYLENE GLYCOL
ALT	ALTERNATE	FCO	FLOOR CLEAN OUT	PH	PHASE
AMPS	AMPERES	FD	FIRE DAMPER, FLOOR DRAIN	PSI	POUNDS PER INCH
APD	AIR PRESSURE DROP	FO	FUEL OIL	R/A	RETURN AIR
ARCH	ARCHITECTURAL	G	NATURAL GAS	PW	PUMPED WASTE
AWT	AVERAGE WATER TEMPERATURE	GPH	GALLONS PER HOUR	ORL	OVERFLOW RAIN LEADER
BDD	BACKDRAFT DAMPER	GPM	GALLONS PER MINUTE	RP	RADIANT PANEL
BHD	BOTTOM HORIZONTAL DISCHARGE	GI	GREASE INTERCEPTOR	RPM	REVOLUTIONS PER MINUTE
BI	BACKWARD INCLINED	GT	GLYCOL TANK	RL	RAIN LEADER
BLDG	BUILDING	HB	HOSE BIBB	S/A	SUPPLY AIR
BOD	BOTTOM OF DUCT	HC	HEATING COIL	SD	STORM DRAIN
BTUH	BRITISH THERMAL UNIT / HOUR	HD	HEAD	SNGS	SNOWMELT GLYCOL SUPPLY
C/A	COMBUSTION AIR	HWR	HEATING WATER RETURN	SNGR	SNOWMELT GLYCOL RETURN
CFM	CUBIC FEET PER MINUTE	HWS	HEATING WATER SUPPLY	SP	STATIC PRESSURE
CLG	CEILING	HW	HOT WATER	T/A	TRANSFER AIR
CONT	CONTINUED	HWC	HOT WATER CIRCULATED	TBD	TO BE DETERMINED
CO	CLEANOUT	HP	HORSEPOWER	TEMP	TEMPERATURE
CONN	CONNECTION	ID	INSIDE DIAMETER	TOD	TOP OF DUCT
CP	CIRCULATION PUMP	IN	INCHES	TSP	TOTAL STATIC PRESSURE
CUH	CABINET UNIT HEATER	LAT	LEAVING AIR TEMPERATURE	TSTAT	THERMOSTAT
CW	COLD WATER	LF	LINEAL FEET	TYP	TYPICAL
ø	DIAMETER	LFT	LEAVING FLUID TEMPERATURE	UBD	UP BLAST DISCHARGE
dB	DECIBELS	LPG	PROPANE GAS	UH	UNIT HEATER
DBD	DOWNBLAST DISCHARGE	MAU	MAKE UP AIR UNIT	UON	UNLESS OTHERWISE NOTED
DEG	DEGREE	MAX	MAXIMUM	V	VENT
DN	DOWN	MBH	THOUSAND BTU PER HOUR	VTR	VENT THRU ROOF
DS	DOWNSPOUT	MBV	MANUAL BALANCE VALVE	WC	WATER COLUMN
DWG	DRAWING	MFGR	MANUFACTURER	WG	WATER GAGE
E/A	EXHAUST AIR	M/A	MAKEUP AIR	WCO	WALL CLEAN OUT
EAT	ENTERING AIR TEMPERATURE	MIN	MINIMUM	WHA	WATER HAMMER ARRESTOR
EF	EXHAUST FAN	MTD	MOUNTED	WH	WATER HEATER
EFT	ENTERING FLUID TEMPERATURE	NC	NOISE CRITERIA	W	WASTE
ET	EXPANSION TANK	N.C.	NORMALLY CLOSED	W/	WITH
EXH	EXHAUST	N.O.	NORMALLY OPEN	W/O	WITHOUT

PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE	MINIMUM CONNECTION SIZE CW	HW	WASTE	VENT	TRAP	MFGR	MODEL	COLOR	TRIM / REMARKS
WC-1	WATER CLOSET – ADA	1/2"	---	3"	2"	---	KOHLER	HIGHLINE K-3999	WHITE	ELONGATED BOWL, SEAT, INSULATED TANK, ADA-COMPLIANT BOWL HEIGHT
WC-2	WATER CLOSET	1/2"	---	3"	2"	---	KOHLER	HIGHLINE K-3999	WHITE	ELONGATED BOWL, COMFORT HEIGHT, SEAT, INSULATED TANK
SK-1	SINK – DOUBLE COMPARTMENT	1/2"	1/2"	2"	1-1/2"	2"	ELKAY	ECTSR33229BG	STAINLESS	DELTA FAUCET 400LF-HDF WITH HOSE SPRAY, METAL GRID STRAINERS
LV-1	LAVATORY – WALL MOUNT – ADA	1/2"	1/2"	1-1/2"	1-1/2"	1-1/4"	KOHLER	KINGSTON K-2005	WHITE	DELTA FAUCET 22C101, METAL GRID STRAINER, WALL SUPPORTS, ADA
LV-2	LAVATORY – BASE CABINET	1/2"	1/2"	1-1/2"	1-1/2"	1-1/4"	INTEGRAL TO CABINETRY, PER ARCH.		WHITE	DELTA FAUCET 515LF-HDF WITH METAL GRID STRAINER
RB-1	REFRIGERATOR BOX	1/2"	---	---	---	---	OATEY	38688	---	WITH WATER HAMMER ARRESTOR
SK-2	SINK – MOP	1/2"	1/2"	3"	2"	3"	FIAT	MSB-2424	WHITE	SERVICE FAUCET 830-AA, HOSE AND HOSE BRACKET 832-AA, VINYL BUMPERGUARD E-77-AA,
										MOP HANGER 889-CC
DF-1	DRINKING FOUNTAIN – ADA	1/2"	---	1-1/2"	1-1/4"	1-1/4"	ELKAY	EDFPBM117K	STAINLESS	PUSH BUTTON FOUNTAIN, WALL MOUNTED DOUBLE BASIN WITH CARRIER, NON-CHILLED,
										BARRIER FREE/ADA COMPLIANT, LEAD FREE
FD-1	FLOOR DRAIN	1/2"	---	2"	1-1/2"	2"	J.R. SMITH	2005-A	---	ROUND TOP, TRAP PRIMER CONNECTION
HB-1	HOSE BIBB – FROST PROOF	3/4"	---	---	---	---	WOODFORD	MODEL 14	---	WITH HANDLE AND HOSE CONNECTION, PROVIDE SCREW ON TYPE VACUUM BREAKER
EW-1	EMERGENCY EYEWASH	---	---	---	---	---	HAWS	7500	GREEN	WALL MOUNTED PORTABLE GRAVITY FED EYEWASH, NO PLUMBED CONNECTIONS

TANK SCHEDULE

SYMBOL	MFGR / MODEL	FUNCTION	MEDIUM	CAPACITY GALLONS	DIMENSIONS	MATERIALS	LABEL	REMARKS
ET-1	AMTROL / AX-40V	HYDRONIC EXPANSION	WATER	21.7	12"ø x 26"H	STEEL/BUTYL	ASME	11.3 GAL ACCEPTANCE VOLUME, SET PRECHARGE TO 12 PSIG
ET-2	AMTROL / ST-12C	DHW EXPANSION	WATER	6.4	12"ø x 14"H	STEEL/BUTYL	NSF	3.2 GAL ACCEPTANCE VOLUME, SET PRECHARGE TO 50 PSIG
ET-3	AMTROL / SX-15	DUCT COIL EXPANSION	50% PG	2.0	11"ø x 23"H	STEEL/BUTYL	NSF	0.9 GAL ACCEPTANCE VOLUME, SET PRECHARGE TO 12 PSIG
GT-1	AXIOM / DMF150	HYDRONIC MAKEUP	50% PG	4.5	9.5"x9.5"x14"H	PLASTIC	---	PRE-ASSEMBLED WITH GLYCOL PUMP, 120/1, W/ TANK MOUNTING SHELF

BOILER SCHEDULE

SYMBOL	MFGR / MODEL	TYPE	FLUID	FUEL	GROSS INPUT (MBH)	DOE HEATING OUTPUT (MBH)	BURNER HP	BURNER VOLTS/PH	LABEL	REMARKS
B-1	WEIL-MCLAIN / EVG 299	STAINLESS	WATER	NATURAL GAS	299	243	FR	120/1	ASME	TRIM PER INTERNATIONAL MECHANICAL CODE CHAPTER 10, ASME CSD-1 COMPLIANT, 30 PSI RELIEF VALVE,
										INSTALL PER NFPA 31, DIRECT VENT MODEL, PROVIDE W/ TACO 0013 CIRCULATOR PUMP & NEUTRALIZING KIT

PUMP SCHEDULE

SYMBOL	MFGR / MODEL	SERVICE	FLUID	FLOW (GPM)	HEAD (FT)	ELEC. DATA HP	ELEC. DATA VOLTS/PH	REMARKS
CP-1	TACO / 2400-45	BUILDING HEAT	WATER	16.5	18'	1/3	120/1	CAST IRON CARTRIDGE CIRCULATOR
CP-2	TACO / IL009	DUCT COIL	50% PG	2.0	14'	FR	120/1	IN-LINE TYPE
HWCP-1	TACO / 006	HOT WATER CIRC.	WATER	1.5	7'	FR	120/1	APPROVED FOR POTABLE WATER

BASEBOARD RADIATION SCHEDULE

SYMBOL	MFGR / MODEL	OUTPUT (BTU/LF)	FLUID	EFT	LFT	TUBE SIZE	ELEMENT FIN SIZE	FIN PER FOOT	FIN THICKNESS	NUMBER OF TIERS	ENCLOSURE HEIGHT	ENCLOSURE THICKNESS	REMARKS
BB-1	STERLING / JVB-S14B C3/4-435	1,120	WATER	180°F	160°F	3/4"ø Cu	4-1/4" x 3-5/8"	50	0.020" AL	1	18"	18 GA	ENCLOSURE COLOR PER ARCHITECT
BB-2	STERLING / B C3/4-435	980	WATER	180°F	160°F	3/4"ø Cu	4-1/4" x 3-5/8"	50	0.020" AL	1	---	---	BARE ELEMENT

HEAT RECOVERY VENTILATOR SCHEDULE

SYMBOL	MFGR / MODEL	AIRFLOW (CFM)	TSP @ HIGH SPEED (IN. WG)	ELEC. DATA WATTS/AMPS/VOLTS/PH	REMARKS
HRV-1	LIFEBREATH / 650FD	500	0.5	912/7.6/120/1	90% TEMPERATURE EFFECTIVENESS, PROVIDE WITH 99-BC02 CONTROLLER. PROVIDE WITH REMOTE MOUNTED CONDENSATE PUMP: BLUE
					DIAMOND MAXIBLUE WITH RESERVOIR AND INTEGRAL CONDENSATE SENSOR (120V)

FAN SCHEDULE

SYMBOL	MFGR / MODEL	SERVICE	TYPE	CFM	ESP (IN. WG)	MOTOR DATA AMPS	MOTOR DATA VOLTS/PH	DRIVE	SONES	REMARKS
CF-1	LEADING EDGE / 60001	DE-STRATIFICATION	CEILING	46,000	---	1.4	120/1	DIRECT	---	WITH REMOTE SPEED CONTROLLER, PROVIDE WITH EXTENDED DOWNROD IF NEEDED
EF-1	PANASONIC / FV-1115VK2	BATHROOM EXHAUST	CEILING	130	0.25"	0.24	120/1	DIRECT	<1	WITH INTEGRAL GRILLE AND BACKDRAFT DAMPER, ENERGY STAR RATED
EF-2	PANASONIC / FV-1115VK2	I.T. ROOM EXHAUST	CEILING	130	0.25"	0.24	120/1	DIRECT	<1	WITH INTEGRAL GRILLE AND BACKDRAFT DAMPER, ENERGY STAR RATED
EF-3	PANASONIC / FV-0511VK2	CRAWLSPACE EXHAUST	CEILING	50	0.25"	0.2	120/1	DIRECT	<1	ECM MOTOR, UL LISTED, INTEGRAL BACKDRAFT DAMPER AND GRILLE, CONDENSATION SENSOR
EF-4	PANASONIC / FV-0511VK2	CRAWLSPACE EXHAUST	CEILING	50	0.25"	0.2	120/1	DIRECT	<1	ECM MOTOR, UL LISTED, INTEGRAL BACKDRAFT DAMPER AND GRILLE, CONDENSATION SENSOR

GRILLE - REGISTER - DIFFUSER SCHEDULE

SYMBOL	MFGR / MODEL	TYPE	SERVICE	MATERIAL	FINISH	FACE SIZE	DIFFUSER NECK SIZE	THROW	REMARKS
SA	LIFEBREATH / TECHGRILLE	DIFFUSER	S/A	POLYPROPYLENE	WHITE	7.5"ø	6"ø	360°	ROUND FACE, AIRFLOW ADJUSTABLE BY POSITIONING CENTER CONE
EA	LIFEBREATH / TECHGRILLE	DIFFUSER	E/A	POLYPROPYLENE	WHITE	7.5"ø	6"ø	---	ROUND FACE, AIRFLOW ADJUSTABLE BY POSITIONING CENTER CONE
TA	TITUS / CT-PP	GRILLE	T/A	ALUMINUM	PER ARCH	3"/48"	3"/48"	---	PROVIDE PENCIL PROOF CORE WITH BORDER, BORDER TYPE 7, SPRING FASTENER

DUCT COIL SCHEDULE

SYMBOL	MFGR	SIZE	CFM	AIR P.D. (IN. W.C.)	VELOCITY (FPM)	EAT	LAT	GPM	FLUID	EFT	LFT	WPD (FT. HD.)	REMARKS
DC-1	GREENHECK	23"W x 12"H	500	<0.1	<400	45°F	77°F	1.8	50% PG	180°F	160°F	<1.1'	COIL CONNECTION TYPE AS REQUIRED

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07/15/21
REGISTERED PROFESSIONAL ENGINEER

KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions

No.	Description	Date

Drawn by PJB	Date 07-16-2021
Checked TCH	Job No. 2021.021

Sheet Contents
MECHANICAL LEGEND, ABBREVIATIONS, & SCHEDULES

Sheet No.
M0.01

Plot Date Time: 4/23/2021 9:30:21 AM

TEMPERING VALVE SCHEDULE

SYMBOL	MFGR / MODEL	INLET SIZES	OUTLET SIZE	MINIMUM FLOW RATE (GPM)	FLOW RATE AT 10 PSI DROP (GPM)	FINISH	LISTING	APPROVAL	REMARKS
TV–1	WATTS / LF1170–M2	1"	1"	0.5	10	BRASS	ASSE 1017	CSA B125	INTEGRAL CHECK VALVES & FILTER WASHERS, LEAD FREE, SET OUTLET TO 120°F, CONNECTION AS REQUIRED

LOUVER SCHEDULE

SYMBOL	MFGR / MODEL	SERVICE	MATERIAL	FINISH	FACE SIZE (INCHES)	FREE AREA	REMARKS
L–1	RUSKIN / ELF6375DX	HRV INTAKE	ALUMINUM	PER ARCH	28"W X 14"H	57%	DRAINABLE, COLOR AND FINISH BY ARCHITECT, COORDINATE LOCATION WITH ARCHITECTURAL ELEVATION PLANS
L–2	RUSKIN / ELF6375DX	HRV EXHAUST	ALUMINUM	PER ARCH	28"W X 14"H	57%	DRAINABLE, COLOR AND FINISH BY ARCHITECT, COORDINATE LOCATION WITH ARCHITECTURAL ELEVATION PLANS

HEAT EXCHANGER SCHEDULE

				HOT SIDE					COLD SIDE					
SYMBOL	MFGR / MODEL	TYPE	MBH	FLUID	FLOW (GPM)	WPD (FT HD)	EFT (°F)	LFT (°F)	FLUID	FLOW (GPM)	WPD (FT HD)	EFT DEG F	LFT DEG F	REMARKS
HX–1	TACO / TB10Tx24	BRAZED PLATE	26.5	WATER	1.8	<5	180°F	150°F	50% P.G.	2.0	<5	140°F	170°F	3/4" INLET/OUTLET, COUNTER FLOW ARRANGEMENT

SPECIFICATIONS

PLANS
THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM. THE DRAWINGS ARE PARTLY DIAGRAMMATIC, NOT NECESSARILY SHOWING ALL OFFSETS OR EXACT LOCATIONS OF PIPING AND DUCTS UNLESS SPECIFICALLY DIMENSIONED.

CODE
ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) – 2012 EDITION; INTERNATIONAL MECHANICAL CODE (IMC) – 2012 EDITION; UNIFORM PLUMBING CODE (UPC) – 2012 EDITION, INTERNATIONAL FUEL GAS CODE (IFGC) – 2012 EDITION AND NATIONAL ELECTRICAL CODE (NEC) – 2017 EDITION, AS AMENDED BY THE STATE OF ALASKA. SHEET METAL WORK SHALL BE DONE IN ACCORDANCE WITH SMACNA STANDARDS.

PERMITS
THE CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND FEES.

ELECTRICAL WORK
ALL ELECTRICAL WORK IS TO BE PERFORMED BY A LICENSED ELECTRICIAN.

INSURANCE
CONTRACTOR MUST PROVIDE BUILDERS' ALL RISK INSURANCE, WORKERS' COMPENSATION INSURANCE, AND GENERAL LIABILITY INSURANCE AT ALL TIMES WHILE WORKING ON THIS PROJECT.

WARRANTY
ALL WORK PERFORMED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM ACCEPTANCE. ANY FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER DURING THE GUARANTEE PERIOD.

MATERIALS
ALL MATERIALS SHALL BE NEW AND UNUSED UNLESS OTHERWISE INDICATED, INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS AND IN THE BEST PRACTICE OF THE CRAFT. OBTAIN OWNER'S APPROVAL OF ALL PRODUCTS PRIOR TO ORDERING OR INSTALLING ANY PART OF ANY SYSTEM.

EQUIPMENT SUBSTITUTIONS
ALL EQUIPMENT LISTED IS REPRESENTATIVE OF THE STANDARD OF QUALITY AND PERFORMANCE REQUIRED. "OR EQUAL" SUBSTITUTIONS WILL BE CONSIDERED IF THE SUBSTITUTES ARE SHOWN TO BE EQUAL OR BETTER QUALITY, INCLUDING EFFICIENCY OF PERFORMANCE, SIZE AND WEIGHT.

SUBMITTALS
THE CONTRACTOR SHALL SUBMIT PRODUCT DATA COMPILED IN A BOUND NOTEBOOK FOR MECHANICAL SYSTEMS. ELECTRONIC SUBMITTALS ARE ACCEPTABLE. ALL PRODUCT DATA SHALL BE SUBMITTED AT ONE TIME, PARTIAL SUBMITTALS WILL BE RETURNED WITHOUT REVIEW. PRODUCT DATA SHALL BE APPROPRIATELY MARKED TO INDICATE PROPOSED PRODUCT.

OPERATION AND MAINTENANCE MANUAL
PROVIDE THE OWNER WITH AN OPERATING AND MAINTENANCE MANUAL, TO INCLUDE MANUFACTURER'S SPECIFICATIONS, OPERATING AND MAINTENANCE INSTRUCTIONS, WARRANTY INFORMATION ON EACH PIECE OF EQUIPMENT, START–UP REPORTS, AS WELL AS A SOURCE OF SUPPLY FOR SPARE PARTS AND SERVICE.

ACCESS
PROVIDE WORKABLE ACCESS TO ALL SERVICEABLE AND/OR OPERABLE EQUIPMENT. PROVIDE ACCESS DOOR OF REQUIRED RATING FOR ACCESS TO ALL SERVICEABLE AND/OR OPERABLE EQUIPMENT LOCATED IN WALLS OR BELOW FLOOR.

SLEEVES
PIPING SLEEVES THROUGH FIRE RATED ASSEMBLIES SHALL BE PREMANUFACTURED, UL LISTED ASSEMBLIES. PIPING SLEEVES THROUGH NON FIRE RATED ASSEMBLIES SHALL BE 18 GAUGE GALVANIZED STEEL.

SUPPORTS AND ANCHORS
PIPING, DUCTWORK AND EQUIPMENT SHALL BE ADEQUATELY SUPPORTED IN ACCORDANCE WITH CODE REQUIREMENTS AND GOOD PRACTICE. PIPING SUPPORTS SHALL BE CARBON STEEL, ADJUSTABLE SWIVEL HANGERS WITH THREADED ROD SUPPORT. INSULATED PIPING SHALL BE ROUTED THROUGH HANGERS AND PROVIDED WITH SHEETMETAL INSULATION PROTECTION SADDLES. ALL SUPPORTS SHALL BE SECURED TO BUILDING STRUCTURAL ELEMENTS.

SEISMIC RESTRAINT
EQUIPMENT SHALL BE SEISMICALLY RESTRAINED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND ASCE 7. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A LICENSED STRUCTURAL ENGINEER FOR DESIGN OF SEISMIC RESTRAINT SYSTEMS FOR MECHANICAL EQUIPMENT AND SUBMIT SHOP DRAWINGS AND CALCULATIONS TO THE AUTHORITY HAVING JURISDICTION AS MAY BE REQUIRED AS A DEFERRED SUBMITTAL.

MECHANICAL IDENTIFICATION
PIPING, DUCTWORK, VALVES AND EQUIPMENT SHALL BE PROVIDED WITH IDENTIFICATION. PIPING, CONCEALED OR EXPOSED, SHALL BE LABELED WITH PRE–MANUFACTURED SELF–ADHESIVE TYPE PIPE MARKERS, PRE–MANUFACTURED, SEMI–RIGID PLASTIC, WRAP AROUND PIPE MARKERS OR PAINTED STENCIL, INDICATING SERVICE AND FLOW DIRECTION, AT NOT LESS THAN 20 FEET ON CENTER AND AT EACH SIDE OF WALL AND FLOOR, PENETRATIONS. DUCTWORK, CONCEALED OR EXPOSED, SHALL BE LABELED WITH PAINTED STENCIL, INDICATING FLOW DIRECTION, AT NOT LESS THAN 20 FEET ON CENTER AND AT EACH SIDE OF WALL AND FLOOR, PENETRATIONS. VALVES SHALL BE LABELED WITH TAGS INDICATING SERVICE AND VALVE NUMBER CORRESPONDING TO A VALVE DIRECTORY TO BE DELIVERED TO THE OWNER. EQUIPMENT SHALL BE LABELED WITH PLASTIC NAMEPLATES.

INSULATION
COLD WATER, HOT WATER, AND HEATING WATER/GLYCOL PIPING SHALL BE INSULATED WITH ONE INCH PRE–FORMED FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER JACKET AND PREMANUFACTURED PLASTIC FITTING INSULATION. PLUMBING VTR'S SHALL BE INSULATED WITH TWO INCH PRE–FORMED FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER JACKET DOWN TO 3' WITHIN THE BUILDING. EXHAUST DUCTWORK SHALL BE INSULATED WITH 1" RIGID FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER WITH FOIL SCRIM FACING, TO A POINT 10 FEET WITHIN THE BUILDING. OUTSIDE AIR DUCTWORK AND EXHAUST AIR DUCTWORK BETWEEN HRV AND EXTERIOR TERMINATIONS SHALL BE INSULATED WITH 2" RIGID FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER AND FOIL SCRIM FACING (CRAWLSPACE) OR CANVAS COVERING (MECHANICAL ROOM) AS APPLICABLE. HANDICAPPED ACCESSIBLE SINK P–TRAPS, COLD AND HOT WATER PIPING SHALL BE INSULATED WITH PRE–MANUFACTURED INSULATION SYSTEMS.

PIPING
SANITARY WASTE AND VENT PIPING SHALL BE CAST IRON NO–HUB, COPPER DWV, OR ABS DWV. ABOVEGROUND WATER PIPING SHALL BE TYPE L COPPER OR PEX PIPING LISTED FOR POTABLE WATER APPLICATIONS. SOLDER FOR POTABLE WATER PIPING SHALL BE LEAD–FREE, 95/5 ACCEPTABLE FOR NON–POTABLE PIPING. PEX PIPING JOINTS SHALL BE PERMANENTLY ACCESSIBLE. HEATING WATER/GLYCOL PIPING SHALL BE TYPE L COPPER OR PEX PIPING, VICTAULIC NOT ALLOWED. GAS PIPING SHALL BE SCHEDULE 40 STEEL, THREADED FITTINGS FOR LOW PRESSURE, WELDED FITTINGS FOR MEDIUM PRESSURE. ROUTE PIPES PARALLEL WITH BUILDING LINES UNLESS OTHERWISE INDICATED. CONCEAL ALL PIPING IN FINISHED AREAS UNLESS AUTHORIZED BY OWNER.

VALVES
BALL VALVES OR BUTTERFLY VALVES. GATE VALVES AND GLOBE VALVES ARE NOT ACCEPTABLE. VALVES FOR GAS SERVICE SHALL BE AGA APPROVED. BALANCE VALVES SHALL BE B&G CIRCUIT SETTER OR TACO ACCUFLO, NO SUBSTITUTIONS. PROVIDE ISOLATION VALVES AT EACH FIXTURE GROUP, PUMP, AND TERMINAL HEATING UNIT. PROVIDE BALANCE VALVES AT EACH TERMINAL HEATING UNIT AND WHERE INDICATED ON PLANS.

PLUMBING
PLUMBING FIXTURES SHALL BE COMMERCIAL GRADE, MANUFACTURER AND MODEL AS INDICATED ON THE PLUMBING FIXTURE SCHEDULE, OR APPROVED EQUAL. PLUMBING EQUIPMENT SHALL BE COMMERCIAL GRADE, MANUFACTURER AND MODEL AS INDICATED ON THE EQUIPMENT SCHEDULES, OR APPROVED EQUAL. PROVIDE SHOCK–TROL DEVICES OR AIR CHAMBERS AT ALL FIXTURES.

HEATING
HEATING EQUIPMENT SHALL BE COMMERCIAL GRADE, MANUFACTURER AND MODEL AS INDICATED ON THE EQUIPMENT SCHEDULES, OR APPROVED EQUAL. AIR VENTS SHALL BE PROVIDED AT ALL HIGH POINTS OF THE PIPING SYSTEM. LOW POINT DRAINS SHALL BE PROVIDED AT ALL LOW POINTS OF THE PIPING SYSTEM. GAS FIRED APPLIANCE CHIMNEY SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS.

GLYCOL
PROVIDE PRE–MIXED HYDRONIC GRADE INHIBITED PROPYLENE GLYCOL (DOWFROST HD OR EQUAL) AT A RATE OF 50% WATER TO 50% GLYCOL. PROVIDE 10 GALLONS ADDITIONAL MIX AT THE END OF THE PROJECT.

VENTILATION
VENTILATION EQUIPMENT SHALL BE COMMERCIAL GRADE, MANUFACTURER AND MODEL AS INDICATED ON THE EQUIPMENT SCHEDULES, OR APPROVED EQUAL. DUCTWORK SHALL BE GALVANIZED SHEET METAL, RECTANGULAR OR ROUND AS INDICATED ON PLANS, WHERE RECTANGULAR DUCTWORK IS INDICATED, ROUND MAY BE USED WHEN APPROVED BY THE ENGINEER. DUCTWORK SHALL BE CONSTRUCTED, INSTALLED, AND TESTED IN ACCORDANCE WITH SMACNA STANDARDS. ACOUSTICAL TURNING VANES SHALL BE PROVIDED AT SQUARE DUCTWORK ELBOWS OR WHERE INDICATED ON PLANS. VOLUME DAMPERS SHALL BE PROVIDED WHERE INDICATED.

CONTROLS SYSTEMS
THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL CONTROL SYSTEM AS REQUIRED TO PROVIDE EQUIPMENT CONTROL AS SPECIFIED UNDER THE SEQUENCE OF OPERATIONS. THE CONTROL SYSTEM SHALL BE AN ELECTRIC TYPE CONTROL SYSTEM. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, POWER, WIRING, CONDUIT, CONTROLLERS, ACTUATORS, AND ASSOCIATED CONTROL COMPONENTS FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL CONTROL WIRING ABOVE 24V SHALL BE ROUTED IN CONDUIT.

FIRE PROTECTION
THE ENTIRE BUILDING SHALL BE PROVIDED WITH A WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 REQUIREMENTS. PROVIDE COMPLETE INTERFACE WITH THE BUILDING SMOKE AND FIRE ALARM SYSTEM. PROVIDE VALVE SUPERVISION AND WATER FLOW ALARMS AND TROUBLE SIGNAL MONITORING SYSTEM AUTOMATICALLY TRANSMITTED TO AN APPROVED STATION. THE CONTRACTOR SHALL DESIGN THE SYSTEM, BY A PERSON NICET LEVEL III OR IV CERTIFIED, OR REGISTERED FIRE PROTECTION ENGINEER. THE CONTRACTOR SHALL SUBMIT DRAWINGS IN ACCORDANCE WITH NFPA 13 REQUIREMENTS TO THE AUTHORITY HAVING JURISDICTION AND THE OWNER. NO WET PIPING SHALL BE INSTALLED OUTSIDE THE THERMAL ENVELOPE OF THE BUILDING. PLASTIC PIPING IS NOT ALLOWED. DRY PIPE SYSTEMS SHALL BE SCHEDULE 40 GALVANIZED STEEL, NO SUBSTITUTIONS. PIPE FITTINGS SHALL BE VICTAULIC OR APPROVED EQUAL. VESTIBULE AREAS SHALL BE PROVIDED WITH DRY PENDANT HEADS.

TEST AND START–UP
TEST ALL PLUMBING PIPING SYSTEMS IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE. TEST ALL HYDRONIC PIPING SYSTEMS IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE. FLUSH, DRAIN AND STERILIZE DOMESTIC WATER PIPING SYSTEMS IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE. FLUSH AND CLEAN HYDRONIC PIPING SYSTEMS IN ACCORDANCE WITH GLYCOL MANUFACTURER'S TREATMENT REQUIREMENTS AND GOOD PRACTICE.

BALANCE
THE CONTRACTOR SHALL BALANCE THE AIR AND GLYCOL SYSTEMS IN ACCORDANCE WITH DESIGN. FLOW RATES ARE TO BE BALANCED TO WITHIN 10% OF DESIGN VALUES. BALANCING PROCEDURES SHALL BE IN ACCORDANCE WITH NEBB OR AABC REQUIREMENTS.

SEQUENCE OF OPERATIONS

BOILER (B–1) AND BOILER CIRCULATION PUMP
BOILER AND BOILER CIRCULATION PUMP SHALL BE CONTROLLED BY BOILER CONTROLLER (TEKMAR OR EQUAL) TO MAINTAIN HEATING WATER SUPPLY HEADER TEMPERATURE SETPOINT. BOILER SHALL MAINTAIN SUPPLY HEADER TEMPERATURE BETWEEN 180°F AND 140°F (ADJUSTABLE) BASED ON OUTSIDE AIR TEMPERATURE RESET UPON CALL FOR HEAT. THE BOILER CONTROLLER SHALL DISABLE BOILER AND BOILER CIRCULATION PUMP, ON OUTSIDE AIR TEMPERATURES OF 65°F (ADJUSTABLE) AND HIGHER. EITHER HIGH LIMIT CONTROLLER SHALL DISABLE BOILER ABOVE 210°F. AT LOW WATER CONDITION, EITHER LOW WATER CUT–OFF SHALL DISABLE BOILER, PROVIDE MANUAL RESET. PROVIDE DOMESTIC HOT WATER OVERRIDE SUCH THAT BOILER IS ENABLED TO FIRE WHEN IT IS DISABLED UPON OUTSIDE AIR TEMPERATURE (>65°F) AND THE HOT WATER GENERATOR HAS A CALL FOR HEAT.

CIRCULATION PUMP (CP–1)
SPACE THERMOSTATS SHALL ENERGIZE THE CORRESPONDING ZONE VALVES OPEN ON CALL FOR HEAT. WHEN ANY ZONE VALVE IS OPENED, THE CIRCULATION PUMP SHALL OPERATE AND THE BOILER SHALL OPERATE. PUMP SHALL REMAIN OPERATIONAL DURING (E)HWG CALL FOR HEAT.

EXISTING HOT WATER GENERATOR ((E)HWG, (E)CP AND TV–1)
HOT WATER GENERATOR'S AQUASTAT SHALL CALL FOR HEAT TO MAINTAIN TANK WATER TEMPERATURE OF 140°F (ADJUSTABLE). ON CALL FOR HEAT FROM THE HOT WATER GENERATOR, CYCLE 2–WAY CONTROL VALVE AND OPERATE EXISTING CIRCULATION PUMP. TV–1 SHALL BE MANUALLY SET TO 120°F (ADJUSTABLE). BOILER SHALL FIRE AS REQUIRED TO MAINTAIN HEADER TEMPERATURE SETPOINT OF 180°F DURING HOT WATER GENERATOR CALL FOR HEAT.

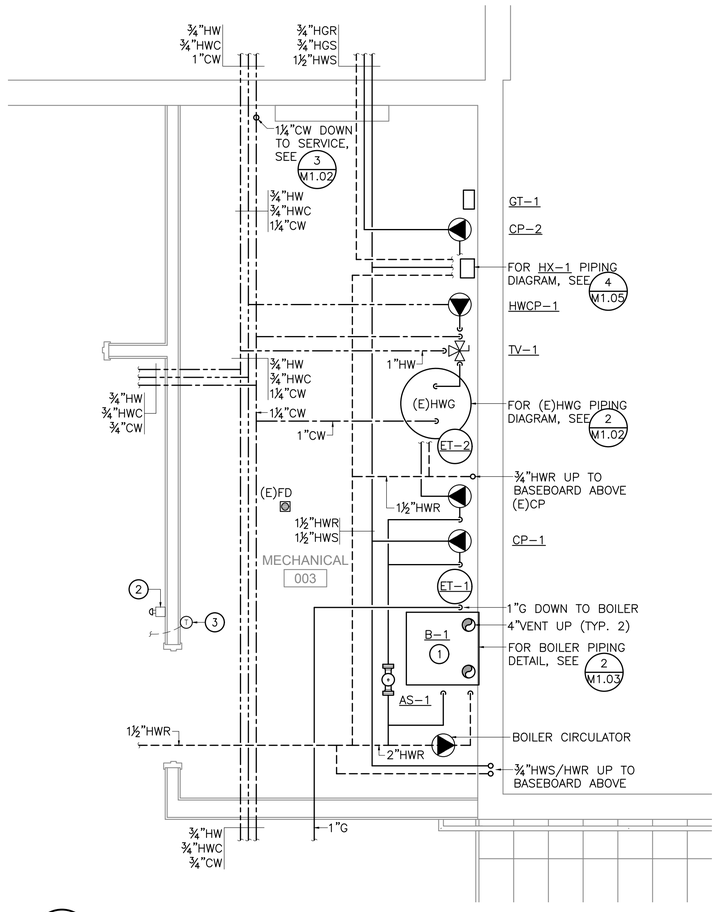
BASEBOARD RADIATION (BB–1 AND BB–2)
UPON CALL FOR HEAT FROM ZONE THERMOSTAT, SIGNAL BOILER, CIRCULATION PUMP, AND CYCLE 2–WAY CONTROL VALVE, TO MAINTAIN SPACE TEMPERATURE.

DUCT COIL (DC–1, CP–2, HX–1, AND GT–1)
THREE WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN DUCT SUPPLY AIR TEMPERATURE (70°F ADJUSTABLE). PROVIDE CONTACTS ON VALVE SO THAT ON GREATER THAN 10% OPEN A CALL FOR HEAT IS PROVIDED TO THE BOILER AND CIRCULATION PUMPS, CP–1 & CP–2, OPERATE.

GT–1 TO OPERATE ON MANUAL INTEGRAL ON–OFF SWITCH.

SHEET NOTES

1. PROVIDE BOILER WITH VERTICAL VENT KIT. INSTALL IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS. MAINTAIN ALL REQUIRED BOILER CLEARANCES.
2. PROVIDE BOILER WITH MANUALLY OPERATED REMOTE SHUTDOWN SWITCH/CIRCUIT BREAKER IN ACCORDANCE WITH ASME CSD–1, COORDINATE WITH ELECTRICAL.
3. USER ADJUSTED REMOTE THERMOSTAT SERVING CRAWLSPACE BASEBOARD.



1 M0.02 ENLARGED MECHANICAL ROOM PLAN
SCALE: 1/2" = 1'-0"

EXHAUST FAN (EF–1)
ON–OFF CONTROL VIA REVERSE WALL SWITCH.

EXHAUST FAN (EF–2)
ON–OFF CONTROL VIA REVERSE ACTING THERMOSTAT. ON TEMPERATURE RISE ABOVE ADJUSTABLE SETPOINT FAN SHALL OPERATE.

EXHAUST FAN (EF–3 & EF–4)
ON–OFF CONTROL VIA INTEGRAL CONDENSATION SENSOR. WHEN CRAWLSPACE RELATIVE HUMIDITY IS ABOVE FAN'S ADJUSTABLE SETPOINT, FAN SHALL OPERATE.

DE–STRATIFICATION CEILING FAN (CF–1)
UPON ACTIVATION FROM THE DIAL ON–OFF WALL SWITCH, VARIABLE SPEED FAN MOTOR SHALL OPERATE AT THE DIAL SPEED SELECTED. REFER TO PLANS FOR LOCATION OF DIAL ON–OFF WALL SWITCHES.

HEAT RECOVERY VENTILATOR (HRV–1)
UNIT SHALL OPERATE CONTINUOUSLY. UNIT MOUNTED ELECTRONIC CONTROLLER SHALL CONTROL FAN SPEED. ELECTRONIC CONTROLLER SHALL AUTOMATICALLY ENGAGE DEFROST CYCLE AS REQUIRED TO MAINTAIN HEAT TRANSFER COIL FROST FREE. REMOTE DIGITAL ELECTRONIC 99–BC02 CONTROLLER SHALL ENGAGE HRV IF UNIT IS OFF, OR BOOST HRV TO HIGH SPEED IF UNIT IS ON, FOR 20–MINUTE TIME DURATIONS.

DOMESTIC HOT WATER CIRCULATING PUMP (HWCP–1):
PUMP SHALL OPERATE CONTINUOUSLY.

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Revisions		
No.	Description	Date

Drawn by PJB	Date 07-16-2021
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Sheet Contents
MECHANICAL SCHEDULES, SPECIFICATIONS, & ENLARGED MECH ROOM PLAN

Sheet No.
M0.02

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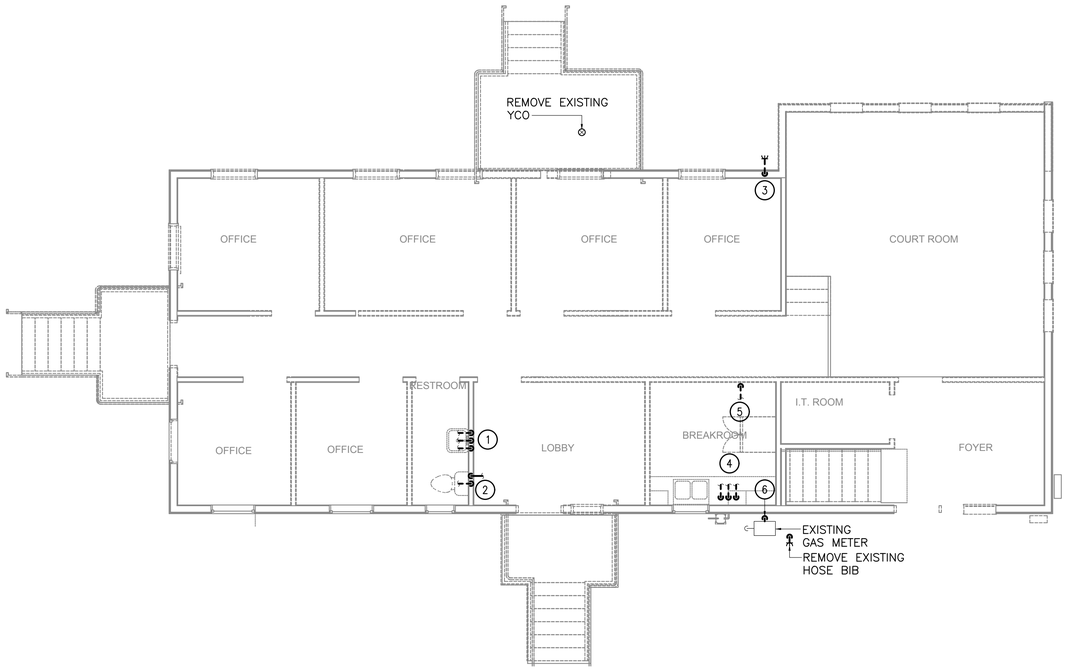


1 PLUMBING DEMOLITION PLAN - FIRST FLOOR

M1.01 SCALE: 3/16" = 1'-0"

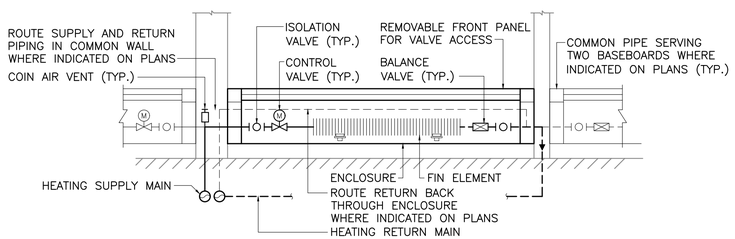
N

GENERAL NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND NON-DESTRUCTIVE WALK-THROUGHS OF THE FACILITY. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, AND SIZES BEFORE START OF WORK.
2. BUILDING COMPONENTS DAMAGED BY ASSOCIATION TO DEMOLITION WORK THAT ARE TO REMAIN SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING. COORDINATE WITH ARCHITECTURAL.
3. PROTECT ALL MECHANICAL EQUIPMENT, CONTROL WIRING, PIPING, AND DUCTWORK THAT IS TO REMAIN FROM DAMAGE DURING DEMOLITION.
4. PRESENT ALL REMOVED AND SALVAGED EQUIPMENT TO THE BUILDING OWNER. IF NOT DESIRED TO BE KEPT BY THE OWNER, CONTRACTOR SHALL HAUL OFF AND PROPERLY DISPOSE OF REMOVED EQUIPMENT.
5. REMOVE BUILDING PLUMBING PIPING MAINS IN THEIR ENTIRETY.

SHEET NOTES

1. REMOVE EXISTING LAVATORY, FAUCET, CARRIER, AND ALL ASSOCIATED ACCESSORIES. DO NOT RETAIN FOR REUSE. EXTENT OF PIPE ROUTING UNKNOWN, MODIFY AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.
2. REMOVE EXISTING TOILET AND ALL ASSOCIATED ACCESSORIES. DO NOT RETAIN FOR REUSE. EXTENT OF PIPE ROUTING UNKNOWN, MODIFY AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.
3. REMOVE EXISTING HOSE BIB AND ALL ASSOCIATED ACCESSORIES AS REQUIRED TO ACCOMMODATE REMODEL. DO NOT RETAIN FOR REUSE. REMOVE BRANCH PIPING BACK TO MAINS.
4. REMOVE EXISTING BREAK ROOM SINK AND ALL ASSOCIATED ACCESSORIES INCLUDING COFFEE MAKER WATER CONNECTION. REMOVE BRANCH PIPING BACK TO MAINS.
5. REMOVE EXISTING REFRIGERATOR BOX AND ASSOCIATED PIPING. REMOVE BRANCH PIPING BACK TO MAINS.
6. IF GAS PIPING IS LESS THAN 1" REMOVE AND REPLACE AS REQUIRED FOR REMODEL. OTHERWISE RETAIN FOR REUSE.



2 BASEBOARD DETAIL

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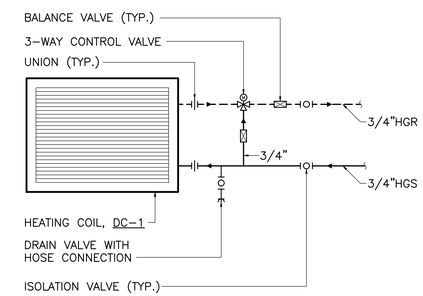
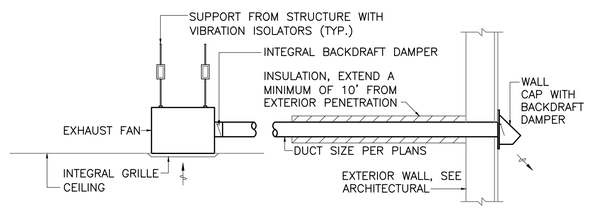


3 DUCT COIL DETAIL

M1.01 SCALE: NO SCALE



4 EXHAUST FAN DETAIL

M1.01 SCALE: NO SCALE

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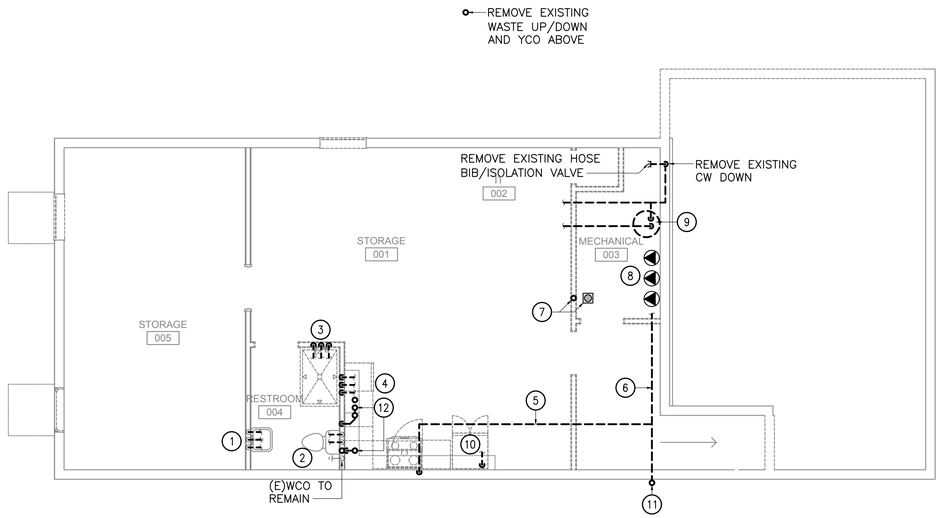
Sheet Contents
MECHANICAL PLUMBING DEMOLITION FIRST FLOOR

Sheet No.
M1.01

Plot Date Time: 4/23/2021 9:30:21 AM



1 PLUMBING DEMOLITION PLAN - BASEMENT

M1.02 SCALE: 3/16" = 1'-0"

N

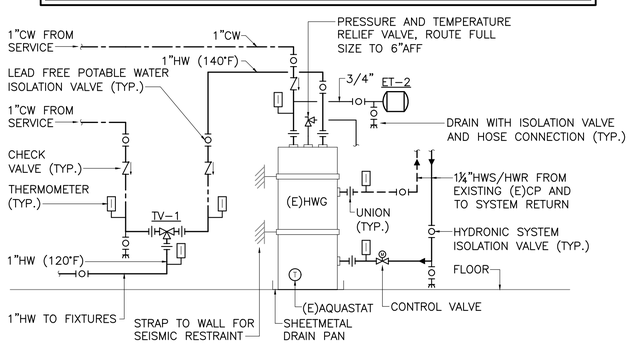
GENERAL NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND NON-DESTRUCTIVE WALK-THROUGHS OF THE FACILITY. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, AND SIZES BEFORE START OF WORK.
2. BUILDING COMPONENTS DAMAGED BY ASSOCIATION TO DEMOLITION WORK THAT ARE TO REMAIN SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING. COORDINATE WITH ARCHITECTURAL.
3. PROTECT ALL MECHANICAL EQUIPMENT, CONTROL WIRING, PIPING, AND DUCTWORK THAT IS TO REMAIN FROM DAMAGE DURING DEMOLITION.
4. PRESENT ALL REMOVED AND SALVAGED EQUIPMENT TO THE BUILDING OWNER. IF NOT DESIRED TO BE KEPT BY THE OWNER, CONTRACTOR SHALL HAUL OFF AND PROPERLY DISPOSE OF REMOVED EQUIPMENT.
5. REMOVE BUILDING PLUMBING PIPING MAINS IN THEIR ENTIRETY.

SHEET NOTES

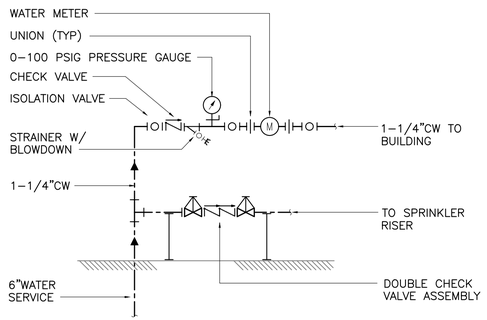
1. EXISTING LAVATORY TO REMAIN FOR REUSE. EXTENT OF PIPING UNKNOWN, FIELD VERIFY, REMOVE AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.
2. EXISTING TOILET TO REMAIN FOR REUSE. EXTENT OF PIPING UNKNOWN, FIELD VERIFY, REMOVE AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.
3. REMOVE EXISTING SHOWER AND ALL ASSOCIATED ACCESSORIES. REMOVE BRANCH PIPING BACK TO MAINS. DO NOT RETAIN FOR REUSE.
4. REMOVE EXISTING BREAK ROOM SINK AND ALL ASSOCIATED ACCESSORIES INCLUDING DISHWASHER CONNECTION AND AIR-GAP. REMOVE BRANCH PIPING BACK TO MAINS. DO NOT RETAIN FOR REUSE.
5. REMOVE ALL GAS PIPING AND ASSOCIATED ACCESSORIES SERVING EXISTING RANGE/OVEN. EXTENT OF PIPE ROUTING UNKNOWN.
6. REMOVE GAS PIPING AS REQUIRED TO ACCOMMODATE BUILDING REMODEL AND REPLACEMENT OF BOILER. EXTENT OF PIPE ROUTING UNKNOWN.
7. EXISTING FLOOR DRAIN TO REMAIN. VENT PIPING IN DEMOLISHED WALL TO BE REMOVED AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.
8. EXISTING HWG CIRCULATION, BOILER CIRCULATION, AND BUILDING HEAT PUMPS TO BE REMOVED. RETAIN HWG CIRCULATION PUMP FOR RE-USE.
9. REMOVE HW/CW DOWN TO HWG AS REQUIRED TO ACCOMMODATE REMODEL. RETAIN EXISTING WATER HEATER AND ASSOCIATED ACCESSORIES AS REQUIRED FOR REUSE.
10. REMOVE EXISTING REFRIGERATOR BOX AND ASSOCIATED PIPING. REMOVE BRANCH PIPING BACK TO MAINS.
11. IF GAS PIPING IS LESS THAN 1" REMOVE AND REPLACE AS REQUIRED FOR REMODEL. OTHERWISE RETAIN FOR REUSE.
12. EXTEND OF PIPE ROUTING SERVING FIXTURES ABOVE UNKNOWN, FIELD VERIFY. MODIFY AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.

NOTE: RE-USE EXISTING HWG AND ASSOCIATED CIRCULATION PUMP. PROVIDE ALL NEW PIPING, FITTINGS, AND ASSOCIATED ACCESSORIES AS REQUIRED FOR NEW CONFIGURATION.



2 HOT WATER GENERATOR PIPING DIAGRAM

M1.02 SCALE: NO SCALE



3 WATER SERVICE PIPING DIAGRAM

M1.02 SCALE: NO SCALE

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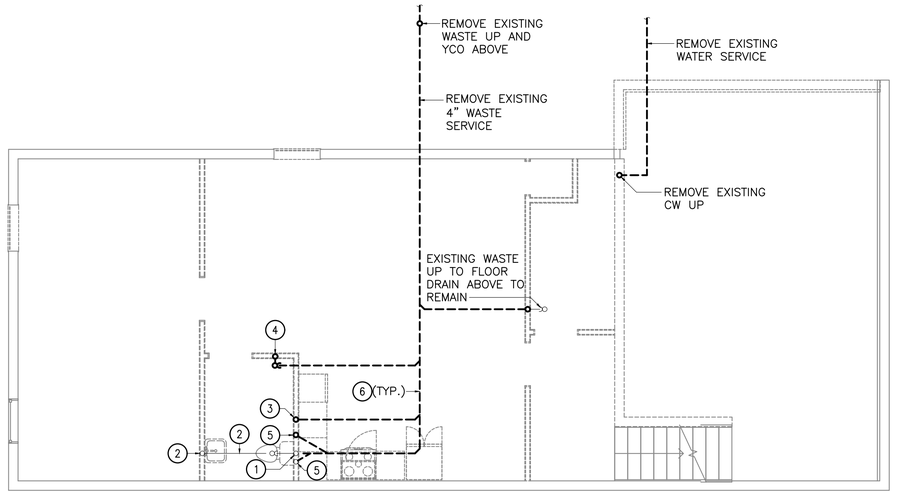
Sheet Contents
MECHANICAL PLUMBING DEMOLITION BASEMENT

Sheet No.
M1.02

Plot Date Time: 4/23/2021 9:30:21 AM



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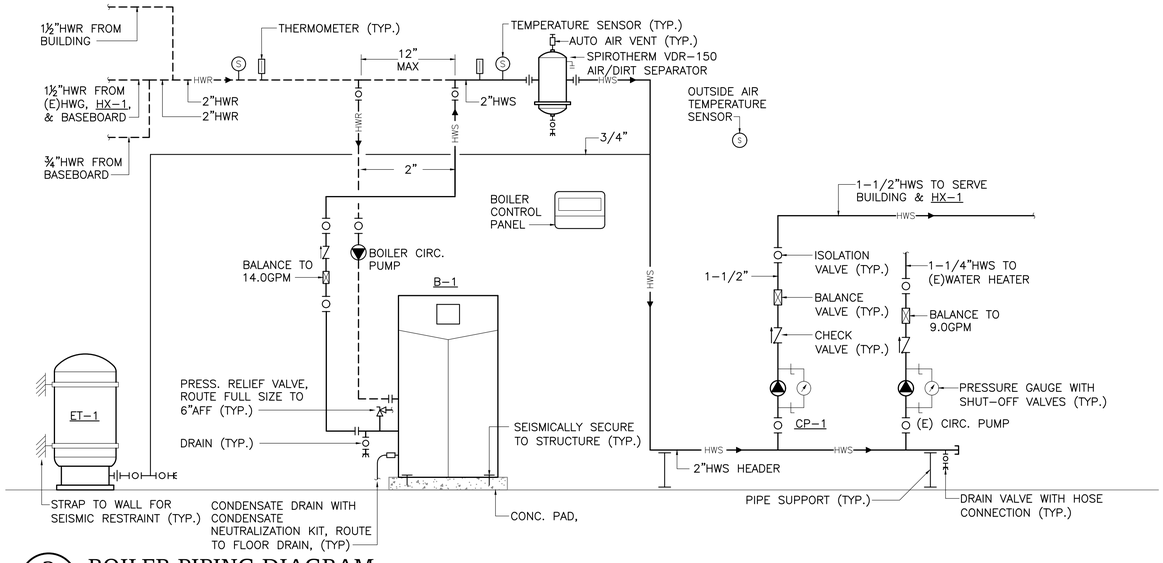
4. IN–FILL HOLES/OPENINGS REMAINING IN EXISTING FLOOR ASSEMBLY FOLLOWING DEMOLITION OF EXISTING PIPING. PATCH AND FINISH SLAB AS REQUIRED, COORDINATE WITH ARCHITECTURAL FLOOR FINISHES.
5. SAW CUT SLAB AS REQUIRED TO ACCESS UNDERSLAB PIPING. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL AS REQUIRED.
6. PRESENT ALL REMOVED AND SALVAGED EQUIPMENT TO THE BUILDING OWNER. IF NOT DESIRED TO BE KEPT BY THE OWNER, CONTRACTOR SHALL HAUL OFF AND PROPERLY DISPOSE OF REMOVED EQUIPMENT.
7. REMOVE BUILDING PLUMBING PIPING MAINS IN THEIR ENTIRETY.

SHEET NOTES

1. EXISTING WASTE AND VENT PIPE SERVING REMOVED TOILET ABOVE TO REMAIN FOR REUSE.
2. EXISTING WASTE PIPE, SERVING EXISTING FIXTURES ABOVE, TO REMAIN FOR REUSE. EXTENT OF PIPING UNKNOWN. FIELD VERIFY AND MODIFY AS REQUIRED FOR REMODEL.
3. REMOVE EXISTING WASTE PIPE TO EXTENT SHOWN SERVING REMOVED BREAK ROOM SINK ABOVE.
4. REMOVE EXISTING WASTE AND VENT PIPE TO EXTENT SHOWN SERVING REMOVED SHOWER ABOVE.
5. EXISTING WASTE PIPE RISER UP TO WCO TO REMAIN.
6. REMOVE ALL 3" AND SMALLER MAIN WASTE PIPING AS REQUIRED TO ACCOMMODATE NEW 4"W SERVICE.

1 PLUMBING DEMOLITION PLAN - UNDERFLOOR

M1.03 SCALE: 3/16" = 1'-0"



2 BOILER PIPING DIAGRAM

M1.03 SCALE: NO SCALE

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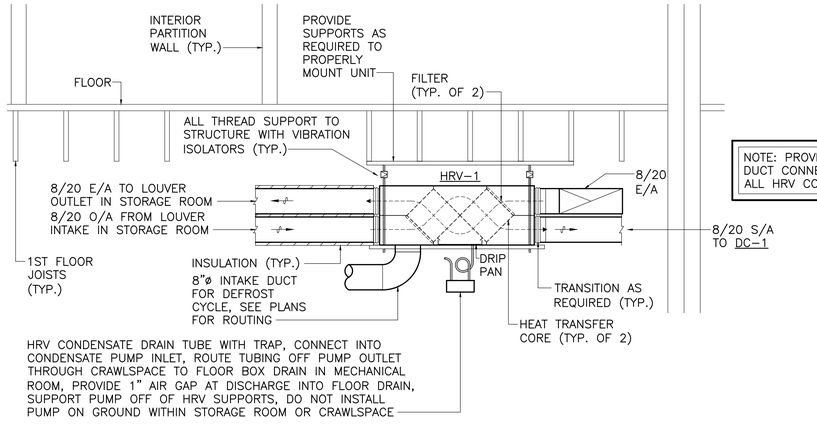

NOTE: PROVIDE FLEXIBLE DUCT CONNECTIONS AT ALL HRV CONNECTIONS.

3 HEAT RECOVERY VENTILATOR SECTION

M1.03 SCALE: 1/2" = 1'-0"

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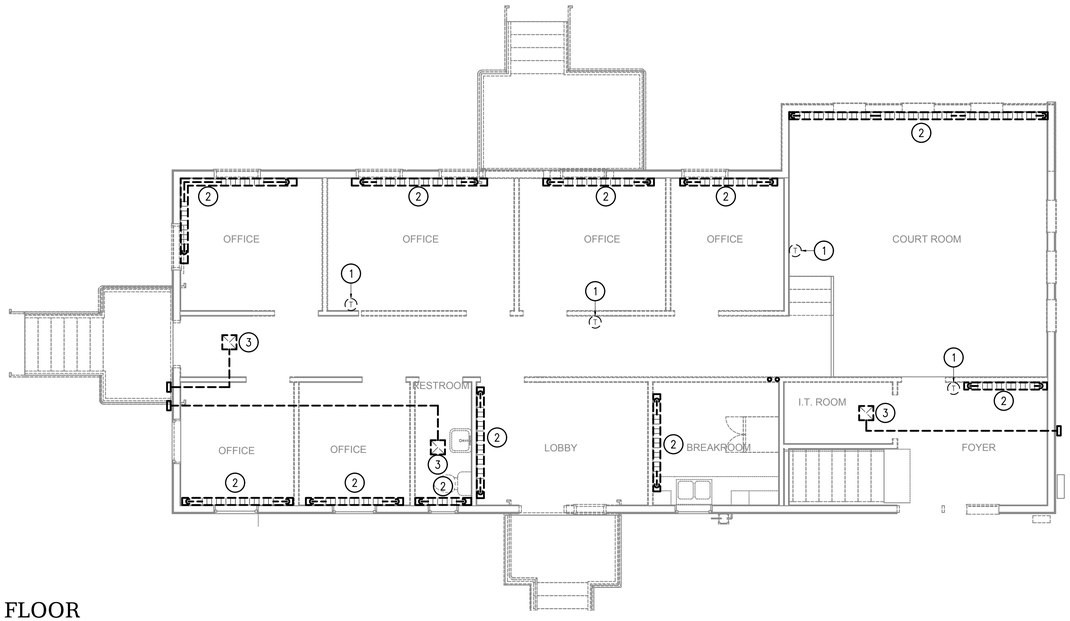
Sheet Contents
MECHANICAL PLUMBING DEMOLITION UNDERFLOOR

Sheet No.
M1.03

Plot Date Time: 4/23/2021 9:30:21 AM



1 HVAC DEMOLITION PLAN - FIRST FLOOR

M1.04 SCALE: 3/16" = 1'-0"

N

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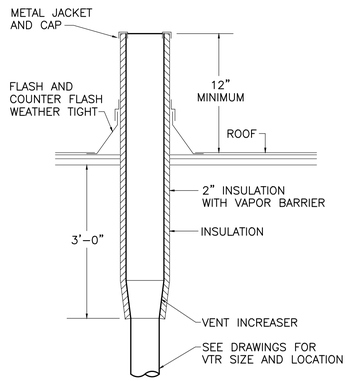
4. IN-FILL HOLES/OPENINGS REMAINING IN EXISTING FLOOR ASSEMBLIES OR WALLS FOLLOWING DEMOLITION OF EXISTING PIPING AND DUCTS. PATCH AND FINISH FLOOR/WALL AS REQUIRED, COORDINATE WITH ARCHITECTURAL FINISHES.
5. PRESENT ALL REMOVED AND SALVAGED EQUIPMENT TO THE BUILDING OWNER. IF NOT DESIRED TO BE KEPT BY THE OWNER, CONTRACTOR SHALL HAUL OFF AND PROPERLY DISPOSE OF REMOVED EQUIPMENT.
6. VENTILATION SYSTEM SHALL BE PROTECTED DURING DEMOLITION PER SMACNA STANDARDS.

SHEET NOTES

(1) REMOVE EXISTING USER ADJUSTABLE THERMOSTAT AND ASSOCIATED CONTROL WIRING TO EXTENT REQUIRED. DO NOT RETAIN THERMOSTAT FOR RE-INSTALLATION. DISPOSE OF ANY MERCURY CONTAINING THERMOSTATS WITH AN EPA REGISTERED AGENCY FOR MERCURY COLLECTION AND DISPOSAL.

(2) REMOVE EXISTING BASEBOARD AND ALL ASSOCIATED ACCESSORIES AS REQUIRED, INCLUDING ENCLOSURE, ELEMENT, CONTROL VALVE, BALANCE VALVE, ISOLATION VALVES, AND PIPING BACK TO MAINS. REMOVE EXISTING UNIT SUPPORTS AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS. REMOVE HEATING BRANCH PIPING TO EXTENT INDICATED ON PLANS.

(3) REMOVE EXISTING EXHAUST FAN, DUCTWORK, CONTROLS, AND EXTERIOR TERMINATION. IN-FILL HOLE REMAINING IN WALL ASSEMBLY FOLLOWING WALL TERMINATION REMOVAL AND PATCH/FINISH WALL AS REQUIRED. COORDINATE WITH ARCHITECTURAL.



2 VTR DETAIL

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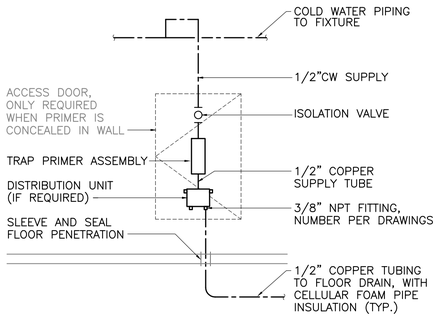

3 TRAP PRIMER DETAIL

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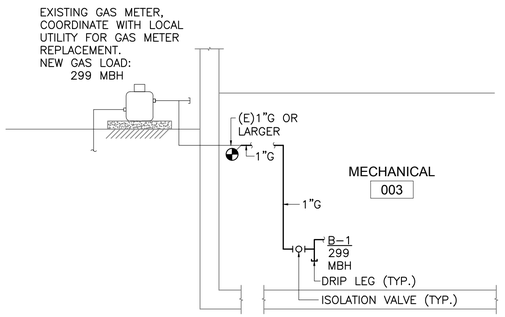

4 GAS METER PIPING DIAGRAM

M1.04 SCALE: NO SCALE

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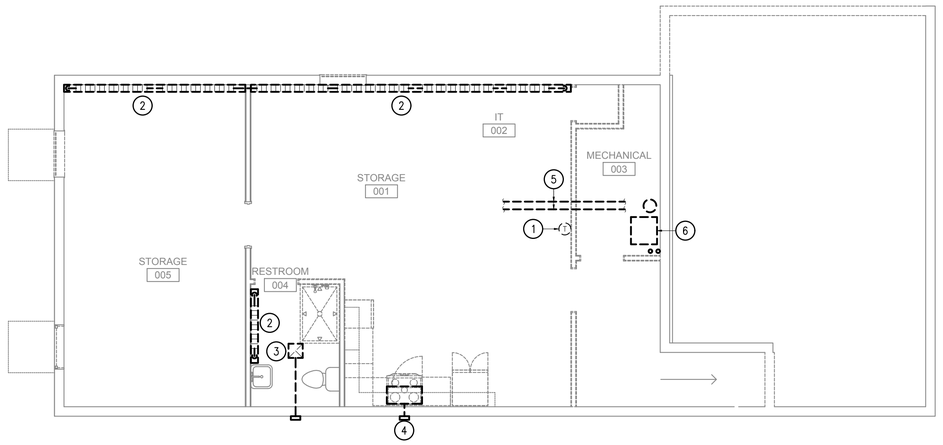
MECHANICAL HVAC DEMOLITION FIRST FLOOR

Sheet No.

M1.04

Plot Date Time: 4/23/2021 9:30:21 AM



1 HVAC DEMOLITION PLAN - BASEMENT

M1.05 SCALE: 3/16" = 1'-0"

N

GENERAL NOTES

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SHEET NOTES

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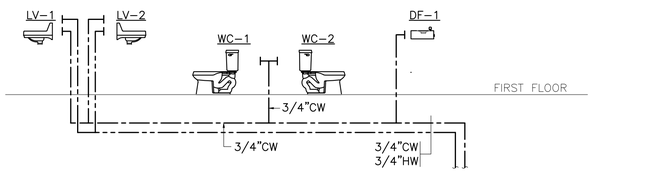
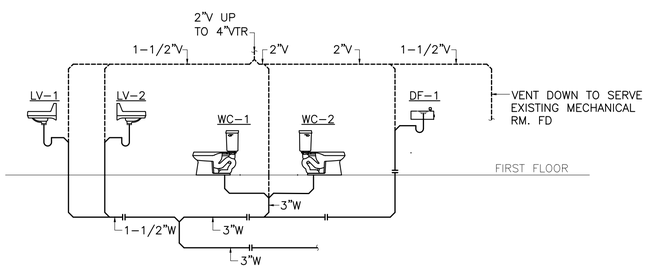
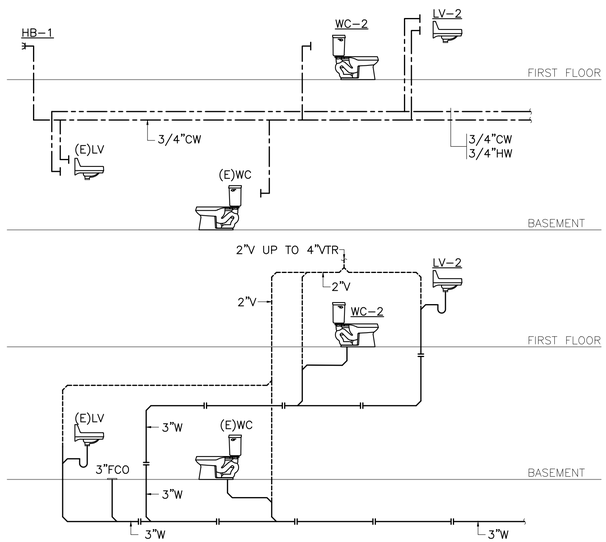
2. REMOVE EXISTING BASEBOARD AND ALL ASSOCIATED ACCESSORIES AS REQUIRED, INCLUDING ENCLOSURE, ELEMENT, CONTROL VALVE, BALANCE VALVE, ISOLATION VALVES, AND PIPING BACK TO MAINS. REMOVE EXISTING UNIT SUPPORTS AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS. REMOVE HEATING BRANCH PIPING TO EXTENT INDICATED ON PLANS.
3. REMOVE EXISTING EXHAUST FAN, DUCTWORK, CONTROLS, AND EXTERIOR TERMINATION. IN-FILL HOLE REMAINING IN WALL ASSEMBLY FOLLOWING WALL TERMINATION REMOVAL AND PATCH/FINISH WALL AS REQUIRED. COORDINATE WITH ARCHITECTURAL.
4. REMOVE EXISTING MICROWAVE RANGE HOOD, ASSOCIATED CONTROL WIRING, AND ALL ASSOCIATED DUCTWORK. IN-FILL HOLE REMAINING IN WALL ASSEMBLY FOLLOWING WALL TERMINATION REMOVAL AND PATCH/FINISH WALL AS REQUIRED. COORDINATE WITH ARCHITECTURAL.
5. REMOVE EXISTING HYDRONIC PIPING IN ITS ENTIRETY SERVING REMOVED BASEBOARD. EXTENT UNKNOWN, FIELD VERIFY.
6. REMOVE EXISTING BOILER AND ALL ASSOCIATED ACCESSORIES AS REQUIRED. REMOVE BOILER VENT PIPING IN ITS ENTIRETY. IN-FILL/REUSE TERMINATIONS AS REQUIRED FOR REMODEL EFFORTS.





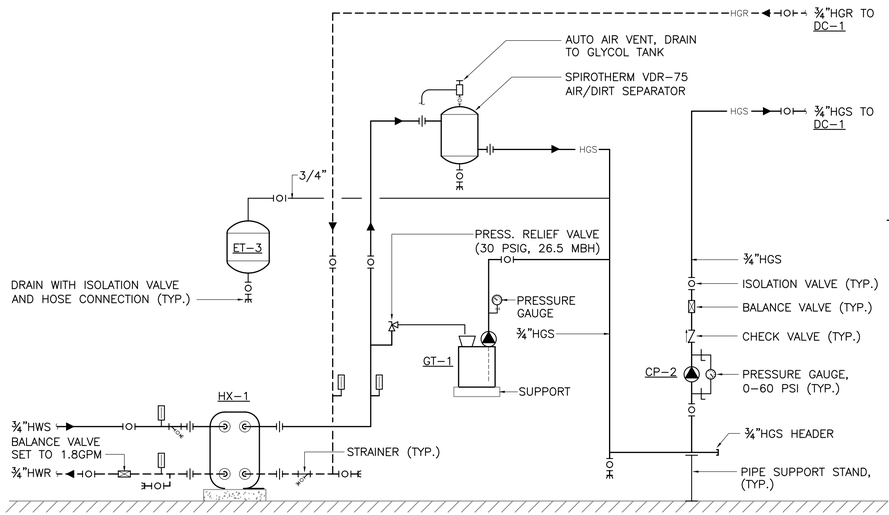
2 PLUMBING RISER DIAGRAM

M1.05 SCALE: NO SCALE



3 PLUMBING RISER DIAGRAM

M1.05 SCALE: NO SCALE



4 HEAT EXCHANGER PIPING DIAGRAM

M1.05 SCALE: NO SCALE

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MECHANICAL HVAC DEMOLITION BASEMENT

Sheet No.
M1.05

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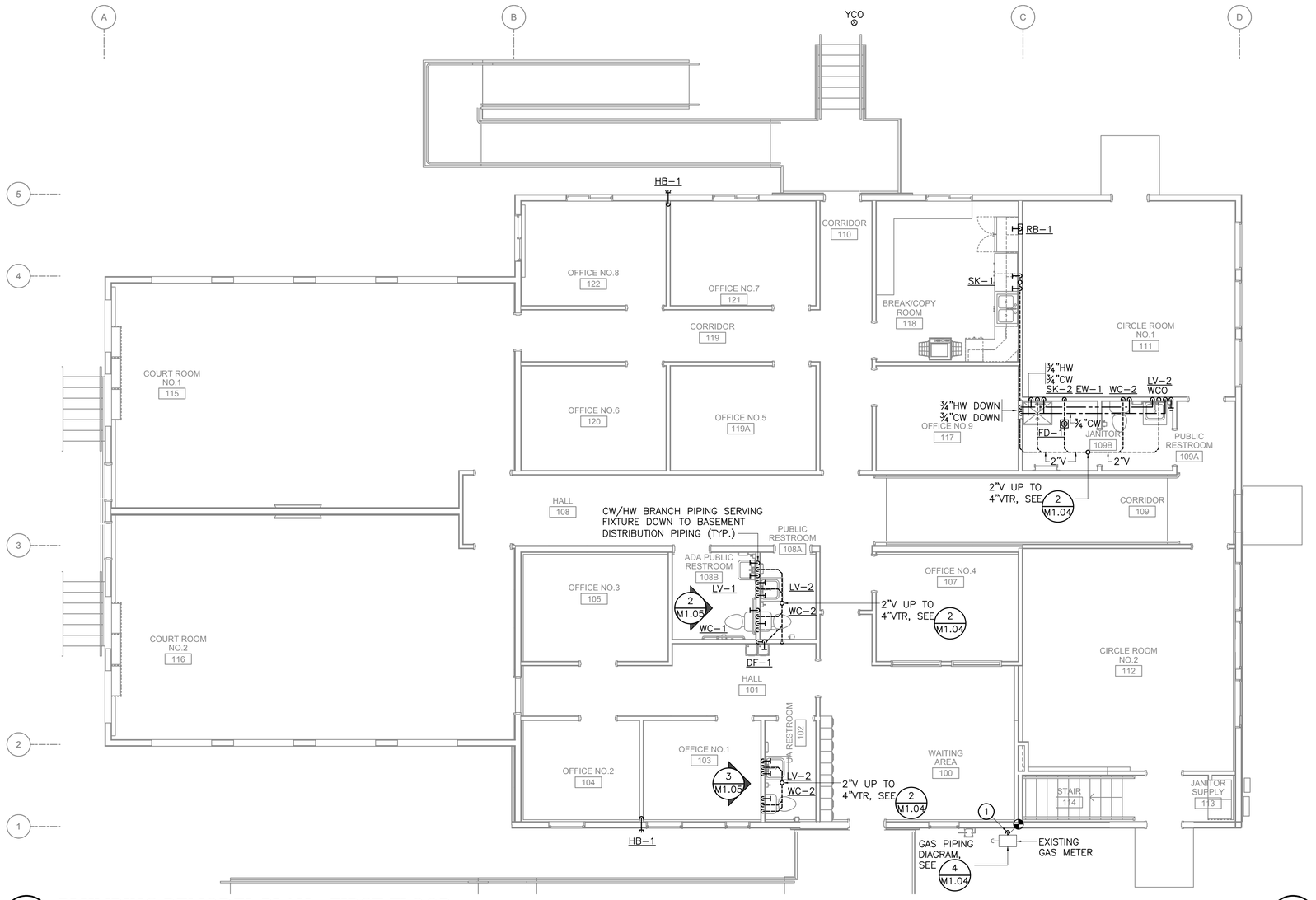

1 M2.01 PLUMBING REMODEL PLAN - FIRST FLOOR

SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND NON-DESTRUCTIVE WALK-THROUGHS OF THE FACILITY. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, AND SIZES BEFORE START OF WORK.
2. BUILDING COMPONENTS DAMAGED BY ASSOCIATION TO REMODEL WORK THAT ARE TO REMAIN SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING. COORDINATE WITH ARCHITECTURAL.
3. PROTECT ALL MECHANICAL EQUIPMENT, CONTROL WIRING, PIPING, AND DUCTWORK THAT IS TO REMAIN FROM DAMAGE DURING REMODEL.
4. BRANCH PIPING TO INDIVIDUAL PLUMBING FIXTURES SHALL EQUAL THE SIZE REQUIRED BY THE PLUMBING FIXTURES SCHEDULE UNLESS OTHERWISE INDICATED.
5. PROVIDE CLEANOUTS ON ALL INDIVIDUAL SINK AND LAVATORY RISERS.
6. DO NOT ROUTE ANY PIPING IN EXTERIOR WALLS UNLESS INDICATED.
7. COORDINATE EXACT LOCATIONS OF ALL FLOOR DRAINS, FLOOR CLEANOUTS, AND RISERS WITH ARCHITECTURAL, FURNISHINGS, AND EQUIPMENT AS REQUIRED TO AVOID CONFLICTS.
8. PROVIDE WATER HAMMER ARRESTOR SHOCK-TROL DEVICES AT EACH FIXTURE'S SEPARATE WATER CONNECTION, SIZE AND LOCATION AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
9. PROVIDE ACCESS DOORS OF APPROPRIATE SIZE AS REQUIRED TO ALL EQUIPMENT AND VALVES LOCATED ABOVE HARD LID CEILINGS OR WITHIN WALLS REQUIRING PERMANENT ACCESS.

SHEET NOTES

(1) IF EXISTING GAS PIPING IS 1" OR LARGER CONNECT AND EXTEND AS REQUIRED FOR REMODEL. OTHERWISE PROVIDE NEW GAS PIPING.

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Sheet Contents
MECHANICAL PLUMBING REMODEL FIRST FLOOR

Sheet No.
M2.01

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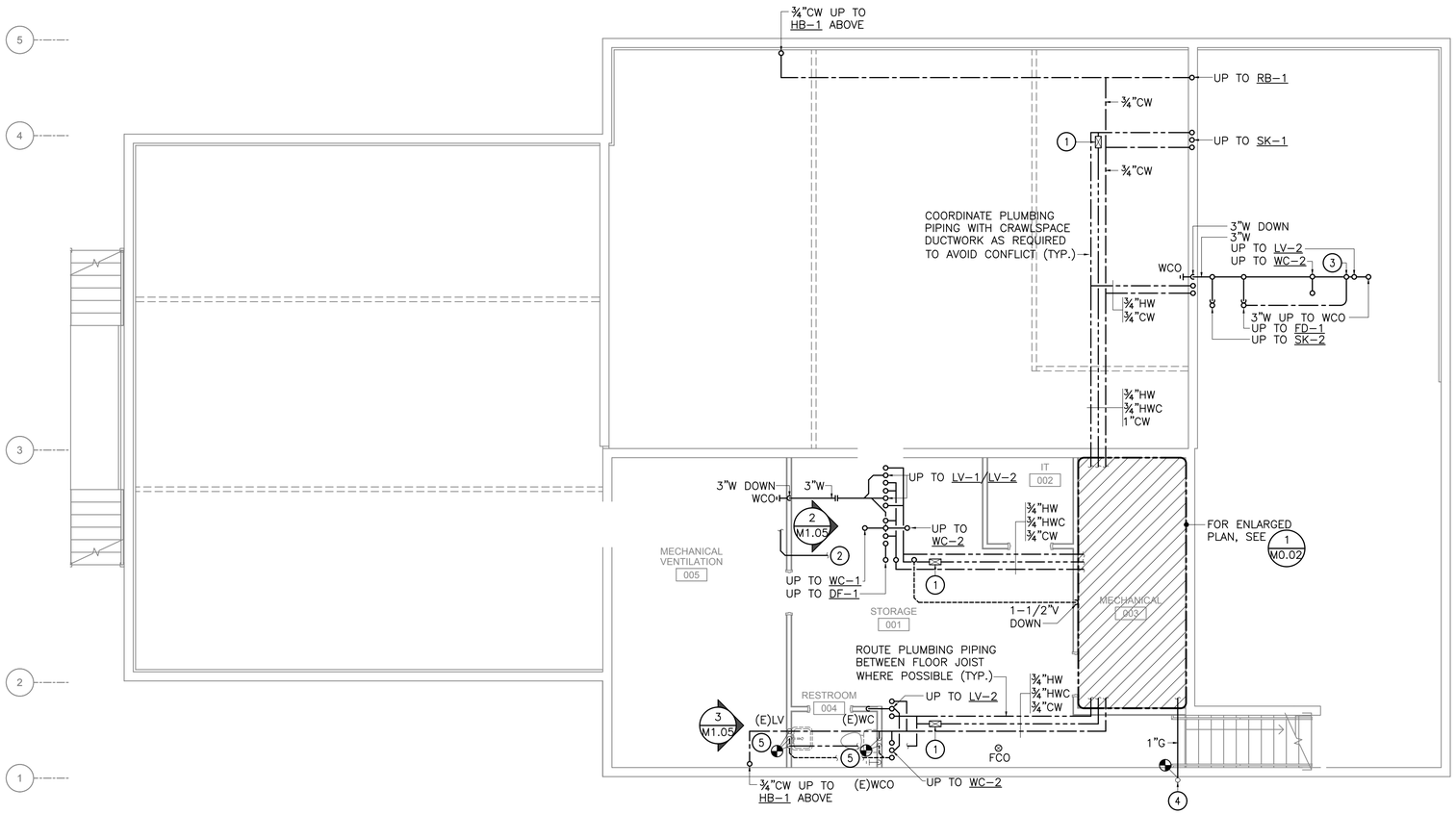

1 PLUMBING REMODEL PLAN - BASEMENT

1 / M2.02

SCALE: 3/16" = 1'-0"

N

GENERAL NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND NON–DESTRUCTIVE WALK–THROUGHS OF THE FACILITY. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, AND SIZES BEFORE START OF WORK.
2. BUILDING COMPONENTS DAMAGED BY ASSOCIATION TO REMODEL WORK THAT ARE TO REMAIN SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING. COORDINATE WITH ARCHITECTURAL.
3. PROTECT ALL MECHANICAL EQUIPMENT, CONTROL WIRING, PIPING, AND DUCTWORK THAT IS TO REMAIN FROM DAMAGE DURING REMODEL.
4. BRANCH PIPING TO INDIVIDUAL PLUMBING FIXTURES SHALL EQUAL THE SIZE REQUIRED BY THE PLUMBING FIXTURES SCHEDULE UNLESS OTHERWISE INDICATED.
5. PROVIDE CLEANOUTS ON ALL INDIVIDUAL SINK, LAVATORY, AND WASHER BOX RISERS.
6. DO NOT ROUTE ANY PIPING IN EXTERIOR WALLS UNLESS INDICATED.
7. SLOPE WASTE PIPING 4" AND LARGER NOT LESS THAN 1/8" PER FOOT. SLOPE WASTE PIPING LESS THAN 4" NOT LESS THAN 1/4" PER FOOT.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR DRAINS, FLOOR CLEANOUTS, RISERS, AND FLOOR SINKS WITH ARCHITECTURAL, FURNISHINGS, AND EQUIPMENT AS REQUIRED TO AVOID CONFLICTS.
9. PROVIDE WATER HAMMER ARRESTOR SHOCK–TROL DEVICES AT EACH FIXTURE'S SEPARATE WATER CONNECTION, SIZE AND LOCATION AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
10. PROVIDE ACCESS DOORS OF APPROPRIATE SIZE AS REQUIRED TO ALL EQUIPMENT AND VALVES LOCATED ABOVE HARD LID CEILINGS OR WITHIN WALLS REQUIRING PERMANENT ACCESS.

SHEET NOTES

1. BALANCE VALVE, SET TO 0.5GPM FLOW RATE. PROVIDE ISOLATION VALVES ON BOTH SIDES OF BALANCE VALVE.
2. ROUTE DISCHARGE FROM HRV TO GRAVITY FEED TO EXISTING FLOOR DRAIN IN MECHANICAL ROOM. ENSURE MINIMUM 1" AIR GAP IS MAINTAINED AT TUBING DISCHARGE.
3. 1/2"CW UP TO TRAP PRIMER, SEE 3/M1.04.
4. IF EXISTING GAS PIPING IS 1" OR LARGER CONNECT AND EXTEND AS REQUIRED FOR REMODEL. OTHERWISE PROVIDE NEW GAS PIPING.
5. CONNECT AND EXTEND EXISTING PIPING AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.

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Sheet Contents
MECHANICAL PLUMBING REMODEL BASEMENT

Sheet No.
M2.02

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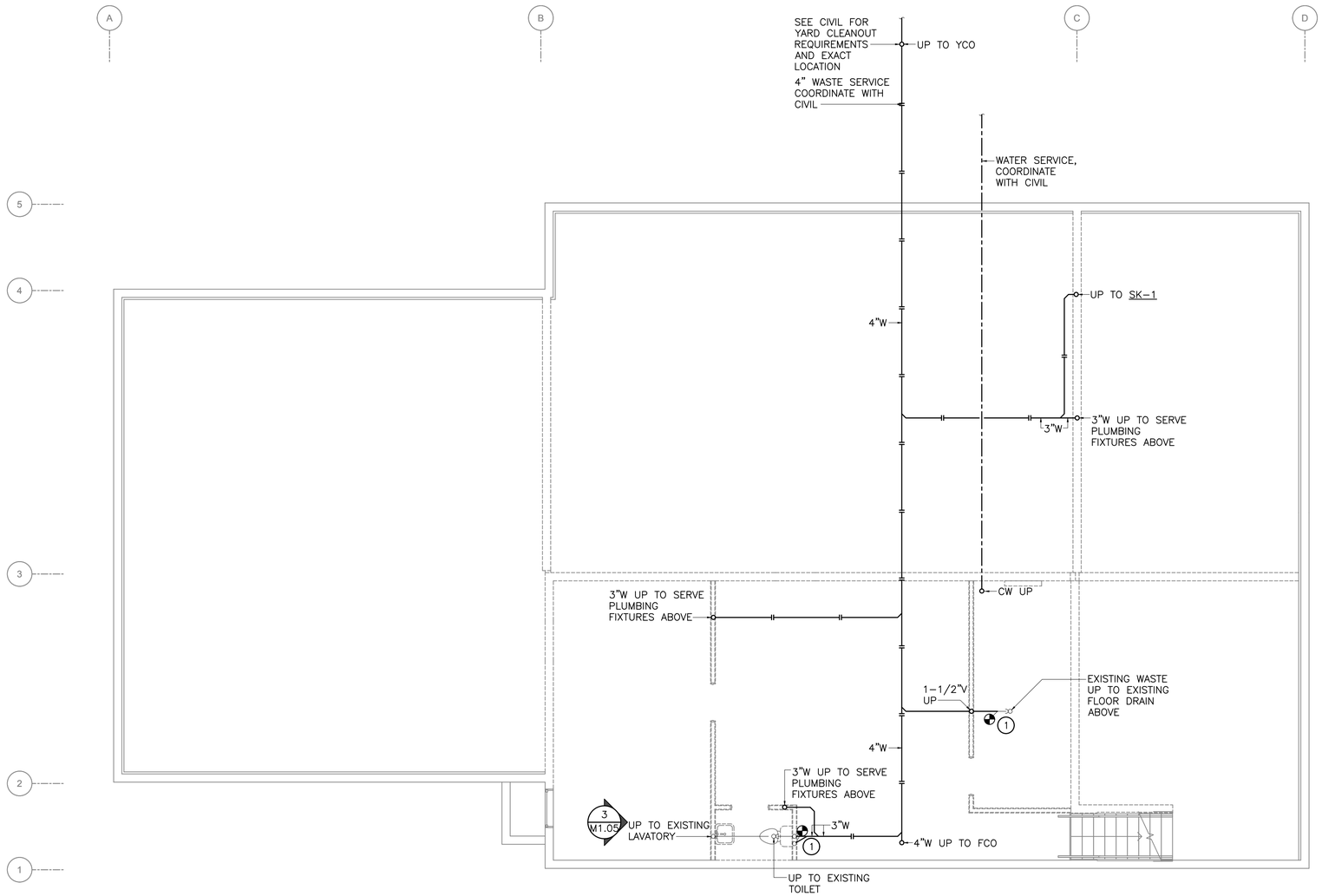

1 M2.03 PLUMBING REMODEL PLAN - UNDERFLOOR

SCALE: 3/16" = 1'-0"

N

GENERAL NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND NON-DESTRUCTIVE WALK-THROUGHS OF THE FACILITY. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, AND SIZES BEFORE START OF WORK.
2. BUILDING COMPONENTS DAMAGED BY ASSOCIATION TO REMODEL WORK THAT ARE TO REMAIN SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING. COORDINATE WITH ARCHITECTURAL.
3. PROTECT ALL MECHANICAL EQUIPMENT, CONTROL WIRING, PIPING, AND DUCTWORK THAT IS TO REMAIN FROM DAMAGE DURING REMODEL.
4. SAW CUT SLAB AS REQUIRED TO ACCESS UNDERSLAB PIPING. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL AS REQUIRED.
5. BRANCH PIPING TO INDIVIDUAL PLUMBING FIXTURES SHALL EQUAL THE SIZE REQUIRED BY THE PLUMBING FIXTURES SCHEDULE UNLESS OTHERWISE INDICATED.
6. PROVIDE CLEANOUTS ON ALL INDIVIDUAL SINK, LAVATORY, AND WASHER BOX RISERS.
7. DO NOT ROUTE ANY PIPING IN EXTERIOR WALLS UNLESS OTHERWISE INDICATED.
8. SLOPE ALL WASTE PIPING 4" AND LARGER NOT LESS THAN 1/8" PER FOOT. SLOPE ALL WASTE PIPING LESS THAN 4" NOT LESS THAN 1/4" PER FOOT.
9. MINIMUM REMODELED WASTE PIPE SIZE UNDER SLAB SHALL BE 2". PLUMBING FIXTURES WITH A 1-1/2" OR SMALLER WASTE CONNECTION SIZE WHICH DO NOT CONNECT INTO A 2" OR LARGER WASTE PIPE ABOVE SLAB SHALL TRANSITION TO A 2" WASTE PIPE ABOVE SLAB. IF A RISER CLEANOUT IS REQUIRED, CLEANOUT SHALL BE MINIMUM OF 2" IN SIZE.
10. COORDINATE EXACT LOCATIONS OF ALL FLOOR DRAINS, FLOOR CLEANOUTS, AND RISERS WITH ARCHITECTURAL, FURNISHINGS, AND EQUIPMENT AS REQUIRED TO AVOID CONFLICTS.

SHEET NOTES

1. CONNECT AND EXTEND EXISTING WASTE PIPING AS REQUIRED TO ACCOMMODATE REMODEL EFFORTS.

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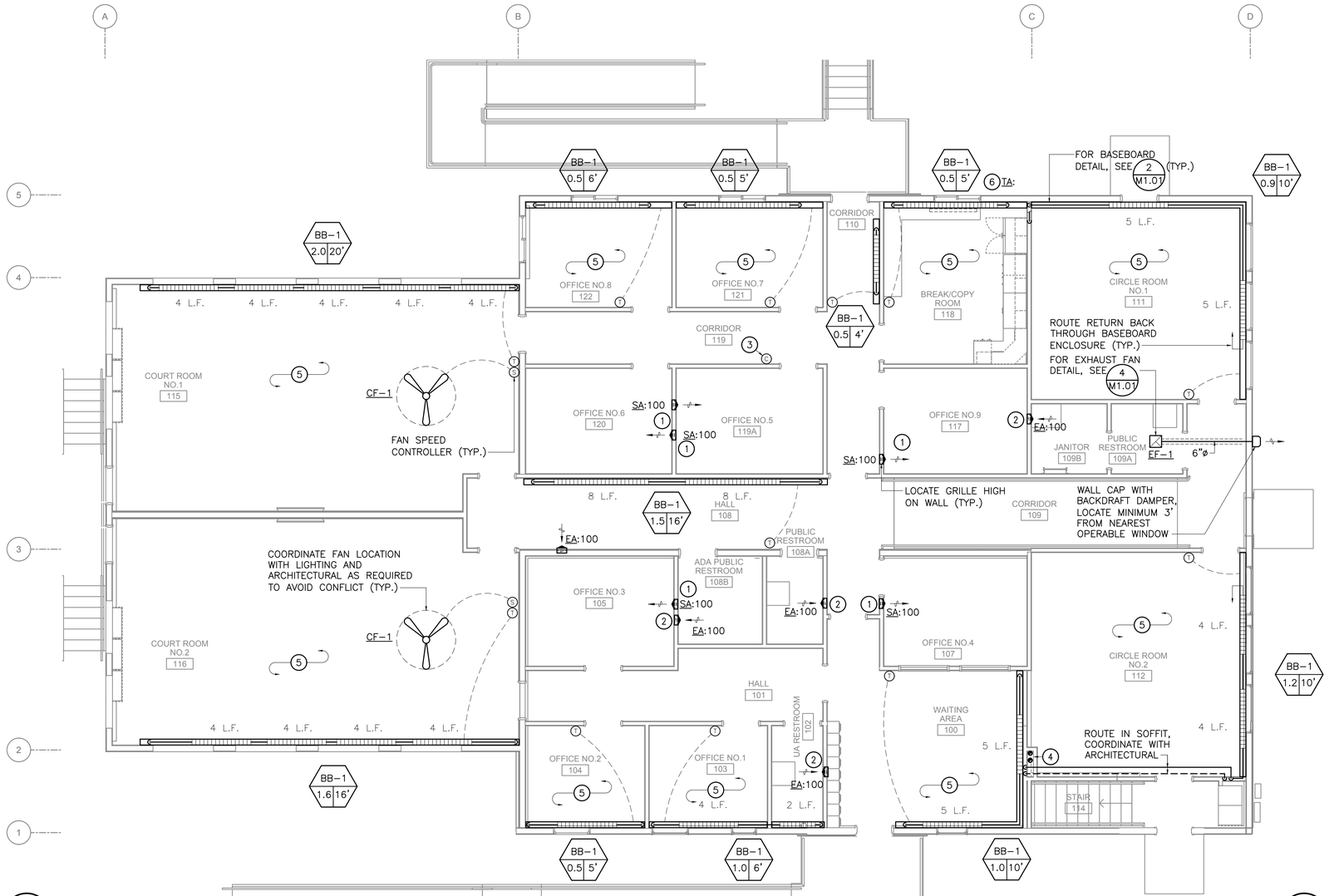
Sheet Contents
MECHANICAL PLUMBING REMODEL UNDERFLOOR

Sheet No.
M2.03

Plot Date Time: 4/23/2021 9:30:21 AM



1 M3.01 HVAC REMODEL PLAN - FIRST FLOOR

SCALE: 3/16" = 1'-0"

N

GENERAL NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND NON–DESTRUCTIVE WALK–THROUGHS OF THE FACILITY. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, AND SIZES BEFORE START OF WORK.
2. BUILDING COMPONENTS DAMAGED BY ASSOCIATION TO REMODEL WORK THAT ARE TO REMAIN SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING. COORDINATE WITH ARCHITECTURAL.
3. PROTECT ALL MECHANICAL EQUIPMENT, CONTROL WIRING, PIPING, AND DUCTWORK THAT IS TO REMAIN FROM DAMAGE DURING REMODEL.
4. BRANCH PIPING TO INDIVIDUAL TERMINAL HEATING UNITS SHALL BE 3/4" UNLESS OTHERWISE INDICATED.
5. DO NOT ROUTE ANY PIPING IN EXTERIOR WALL ASSEMBLIES.
6. PROVIDE ACCESS DOORS OF APPROPRIATE SIZE AS REQUIRED TO ALL EQUIPMENT AND VALVES LOCATED ABOVE HARD LID CEILINGS OR WITHIN WALLS REQUIRING PERMANENT ACCESS.
7. INSTALL THERMOSTATS/SENSORS ON WALLS AT APPROXIMATE LOCATIONS INDICATED AFTER INSTALLATION OF FURNISHINGS. COORDINATE FINAL LOCATION AS REQUIRED SO THAT FURNISHINGS DO NOT COVER OR BLOCK ACCESS TO THERMOSTATS/SENSORS. DO NOT INSTALL ANY THERMOSTATS/SENSORS BEHIND DOORS.
8. COORDINATE FINAL DIFFUSER AND GRILLE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND LIGHTING.
9. VENTILATION SYSTEM SHALL BE PROTECTED DURING REMODEL PER SMACNA STANDARDS.

SHEET NOTES

1. 12/3 S/A DOWN WALL TO MAIN DUCT DISTRIBUTION SYSTEM IN CRAWLSPACE.
2. 12/3 E/A DOWN WALL TO MAIN DUCT DISTRIBUTION SYSTEM IN CRAWLSPACE.
3. HRV CONTROL PANEL.
4. 4"ø BOILER SUPPLY/EXHAUST UP/DOWN IN CHASE. COORDINATE WITH ARCHITECT.
5. THIS ROOM IS NATURALLY VENTILATED THROUGH OPERABLE WINDOWS PER IMC AREA REQUIREMENTS.
6. PROVIDE TRANSFER AIR GRILLE IN COUNTER. TRANSFER AIR GRILLE SHOWN OFFSET FOR CLARITY. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR GRILLE LOCATION.

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Sheet Contents
MECHANICAL HVAC
REMODEL
FIRST FLOOR

Sheet No.
M3.01

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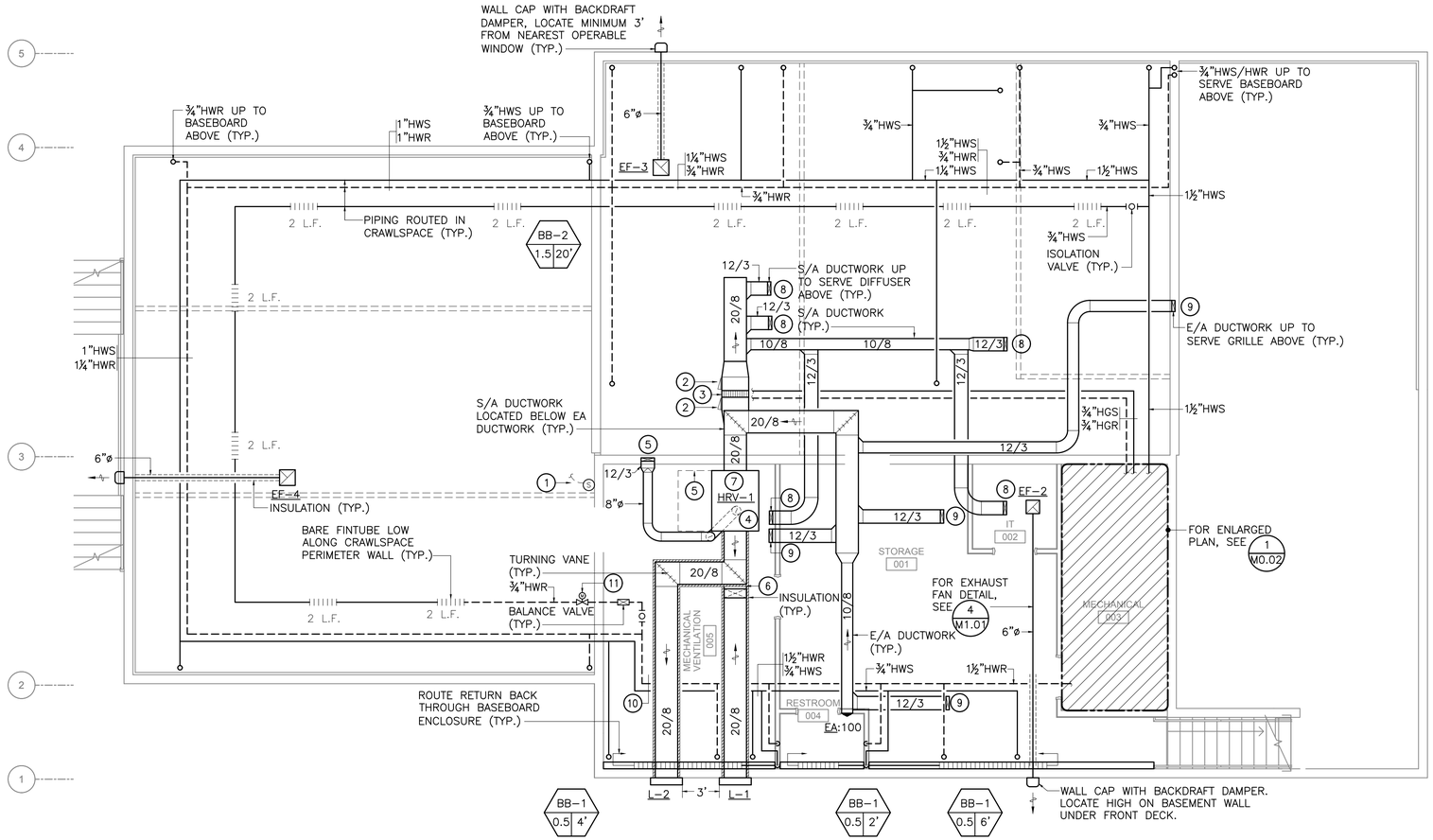

1 M3.02 HVAC REMODEL PLAN - BASEMENT

SCALE: 3/16" = 1'-0"

N

GENERAL NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND NON-DESTRUCTIVE WALK-THROUGHS OF THE FACILITY. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, AND SIZES BEFORE START OF WORK.
2. BUILDING COMPONENTS DAMAGED BY ASSOCIATION TO REMODEL WORK THAT ARE TO REMAIN SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING. COORDINATE WITH ARCHITECTURAL.
3. PROTECT ALL MECHANICAL EQUIPMENT, CONTROL WIRING, PIPING, AND DUCTWORK THAT IS TO REMAIN FROM DAMAGE DURING REMODEL.
4. BRANCH PIPING TO INDIVIDUAL TERMINAL HEATING UNITS SHALL BE 3/4" UNLESS OTHERWISE INDICATED.
5. DO NOT ROUTE ANY PIPING IN EXTERIOR WALL ASSEMBLIES.
6. PROVIDE ACCESS DOORS OF APPROPRIATE SIZE AS REQUIRED TO ALL EQUIPMENT AND VALVES LOCATED ABOVE HARD LID CEILINGS OR WITHIN WALLS REQUIRING PERMANENT ACCESS.
7. INSTALL THERMOSTATS/SENSORS ON WALLS AT APPROXIMATE LOCATIONS INDICATED AFTER INSTALLATION OF FURNISHINGS. COORDINATE FINAL LOCATION AS REQUIRED SO THAT FURNISHINGS DO NOT COVER OR BLOCK ACCESS TO THERMOSTATS/SENSORS. DO NOT INSTALL ANY THERMOSTATS/SENSORS BEHIND DOORS.
8. COORDINATE FINAL DIFFUSER AND GRILLE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND LIGHTING.
9. VENTILATION SYSTEM SHALL BE PROTECTED DURING REMODEL PER SMACNA STANDARDS.

SHEET NOTES

1. TEMPERATURE SENSOR FOR CRAWLSPACE BASEBOARD CONTROL VALVE OPERATION. LOCATE IN CRAWLSPACE NEAR ACCESS HATCH AND ATTACH TO STRUCTURAL MEMBER. CRAWLSPACE SPACE TEMPERATURE SETPOINT SHALL BE USER ADJUSTABLE VIA A REMOTE MOUNTED THERMOSTAT LOCATED IN THE MECHANICAL ROOM.
2. MINIMUM 10/10 DUCT ACCESS DOOR FOR COIL CLEANING. MOUNT TO SIDE OF DUCTWORK. PROVIDE DUCTWORK, SAME SIZE AS COIL FACE, BEFORE AND AFTER COIL AS REQUIRED FOR ACCESS DOOR MOUNTING.
3. DC-1 DUCT COIL, SEE 3/M1.01.
4. 8"ø DEFROST DUCT.
5. MAINTAIN HRV REQUIRED ACCESS AND SERVICE CLEARANCES.
6. 20/8 S/A DUCT DOWN AS REQUIRED TO CONNECT TO HRV-1. PROVIDE WITH TURNING VANES. ROUTE DUCTWORK AS TIGHT TO CEILING AS POSSIBLE.
7. LOCATE HRV BENEATH FLOOR JOISTS AS HIGH AS POSSIBLE. COORDINATE EXACT HEIGHT WITH PIPING AND DUCTWORK AS REQUIRED TO AVOID CONFLICTS. SEE 3/M1.03.
8. 12/3 SUPPLY AIR DUCT UP INTO FIRST FLOOR WALL FRAMING TO SERVE SA GRILLE LOCATED ON WALL ABOVE.
9. 12/3 EXHAUST AIR DUCT UP INTO FIRST FLOOR WALL FRAMING TO SERVE EA GRILLE LOCATED ON WALL ABOVE.
10. 1¼"HWR AND 1"HWS.
11. 2-WAY CONTROL VALVE SERVING CRAWLSPACE BASEBOARD.

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MECHANICAL HVAC REMODEL BASEMENT

Sheet No.
M3.02

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ELECTRICAL SYMBOLS LEGEND

	LIGHT FIXTURE – SURFACE WALL MOUNTED		PANEL
	LIGHT FIXTURE – SURFACE MOUNTED		DUPLEX RECEPTACLE
	LIGHT FIXTURE – RECESSED MOUNTED		GROUND FAULT CURRENT INTERRUPTER RECEPTACLE
	FLUORESCENT FIXTURE – RECESSED MOUNTED 2'x4'		QUADRAPLEX RECPETACLE
	FLUORESCENT FIXTURE – RECESSED MOUNTED 1'x4'		SINGLE RECEPTACLE
	FLOURESCENT FIXTURE – RECESSED MOUNTED 2'x2'		DUPLEX RECEPTACLE–SPLIT WIRED
	FLUORESCENT FIXTURE – SURFACE MOUNTED 2'x4'		SPECIAL PURPOSE RECEPTACLE
	FLUORESCENT FIXTURE – SURFACE MOUNTED 1'x4'		JUNCTION BOX
	FLUORESCENT FIXTURE – SURFACE MOUNTED 2'x2'		FLOOR MOUNTED DEVICE (DUPLEX REC. SHOWN)
	FLUORESCENT FIXTURE – WALL MOUNTED		DISCONNECT SWITCH
	FLUORESCENT STRIP FIXTURE – SURFACE MOUNTED		FUSED DISCONNECT SWITCH
	TRACK LIGHTING SYSTEM		COMBINATION MOTOR STARTER DISCONNECT
	COMBINATION FAN–LIGHT	S_F	FRACTIONAL HP MOTOR SWITCH
	POLE MOUNTED AREA LIGHT		MOTOR
	FIXTURE WITH EMERGENCY BACK–UP		TELEPHONE OUTLET
	EXIT LIGHT – CEILING MOUNTED		DATA (COMPUTER) OUTLET
	EXIT LIGHT – WALL MOUNTED		FA SMOKE DETECTOR
	SELF–CONTAINED EMERGENCY LIGHT	135°F	FA HEAT DETECTOR (FIXED tEMP. NOTED)
X	FIXTURE IDENTIFICATION (LETTER INDICATES TYPE)		FA HORN STROBE
$S	SINGLE POLE SWITCH		FA MANUAL PULL STATION
$_3$ $_4$	THREE WAY SWITCH AND FOUR WAY SWITCH		BELL
	CONDUIT, CONCEALED	M	MAGNETIC DOOR HOLD OPEN
#10	NUMBER AND SIZE OF WIRES (NO SLASHES = 3#12)		STROBE
A–2	HOMERUN TO PANEL (PANEL AND CIRCUIT No.)		SPEAKER
X	NOTE TAG (No. INDICATES NOTE)		SPRINKLER SYSTEM FLOW SWITCH
P	PHOTOCELL		SPRINKLER SYSTEM TAMPER SWITCH
	DASHED SYMBOL = DEVICE TO BE REMOVED	GF	GROUND FAULT CIRCUIT INTERRUPTER
NL	NIGHT LIGHT	UG/E	UNDERGROUND ELECTRICAL
WP	WEATHERPROOF		CAMERA

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER AND MODEL NUMBER	DESCRIPTION	LAMP		MOUNTING	
			TYPE	WATTAGE	TYPE	HEIGHT
A	FLUXWERX #TC1–P–09–D–06–SS–W–1–8–40–D–F2–M	9" DIAMETER PENDANT LIGHTS WITH WIDE DISTRIBUTION, MULTI–VOLT INPUT, AND A 0–10 VOLT DIMMING DRIVER.	LED	21	PENDANT	CONFIRM
B	OCL #PE1–P1DB–60–MW–SMP–LED2–40K–UNV–48–DM1	60" DIAMETER PENDANT LIGHTS WITH PET FELT ACOUSTIC PETALS, 4000K COLOR TEMPERATURE, UNIVERSAL VOLTAGE INPUT AND A 0–10 VOLT DIMMING DRIVER.	LED	80	PENDANT	CONFIRM
C	LITHONIA #BLTX4–40L–ADP–EZ1–LP840	1'X4' SURFACE MOUNTED LED WITH 4000 LUMENS, 4000K COLOR TEMPERATURE, MULTI–VOLT INPUT, AND 0–10 VOLT DIMMING DRIVER.	LED	34	SURFACE	CEILING
D	GOTHAM #EVO6–40/20–AR–MWD–LSS–MVOLT–GZ10–ECOS2	6" RECESSED LED DOWNLIGHT WITH A MEDIUM WIDE DISTRIBUTION, 4000K COLOR TEMPERATURE, 2000 LUMENS, MULTI–VOLT DRIVER, SEMI–SPECULAR FINISH, AND 0–10 VOLT DIMMING.	LED	20	RECESSED	CEILING
E	LITHONIA #FMVCSLS–24IN–MVOLT–30K35K40K–90CRI–BN	2' VANITY FIXTURE WITH SWITCHABLE COLOR TEMPERATURE, 90 CRI, AND A BRUSHED NICKEL FINISH.	LED	18	WALL	ABOVE MIRROR
F	LITHONIA #CLX–L48–5000LM–SEF–FDL–MVOLT–GZ10–40K–80CRI–WH	4' LINEAR LED WITH 5000 LUMENS, 4000K COLOR TEMPERATURE, FLAT DIFFUSE LENS, A MULTI–VOLT DRIVER, 0–10 VOTL DIMMING, AND WHITE FINISH.	LED	35	SURFACE	CEILING
G	GARDCO #PPT–140L–650–CW–G2–T2–3–UNV–DD–BZ	PUREFORM ROUND POST TOP AREA LIGHTING WITH 140 LEDS, 650mA DRIVE CURRENT, 5000K COLOR TEMPERATURE, TYPE 3 DISTRIBUTION, UNIVERSAL VOLTAGE, DIMMING, AND BRONZE FINISH. PROVIDE WITH 4" SQUARE 20' POLE WITH BRONZE FINISH AND UNIVERSAL MOUNTING ADAPTER HUBBELL SSS–T4–DB TO MATCH EXISTING POLES ON ADJACENT LOT.	LED	30	POLE	+22'
H	LITHONIA #DSXW1 LED–10C–530–40K–T4M–MVOLT	EXTERIOR WALL MOUNTED LED WITH 4000K COLOR TEMPERATURE AND A MULTI–VOLT DRIVER.	LED	19	WALL	CONFIRM
	LITHONIA #ELM2L	SELF CONTAINED EMERGENCY LIGHTING UNIT WITH NICKEL CADMIUM BATTERY, WHITE FINISH, AIMABLE OPTICS, AND 120–277V INPUT VOLTAGE DRIVER	LED	5	WALL	+7'–6"
	LITHONIA #LQMSW3G–120/277–EL N	SELF CONTAINED EMERGENCY EXIT SIGN WITH MAINTENANCE FREE LEAD CALCIUM BATTERY	LED		WALL	80"

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Revisions

No.	Description	Date

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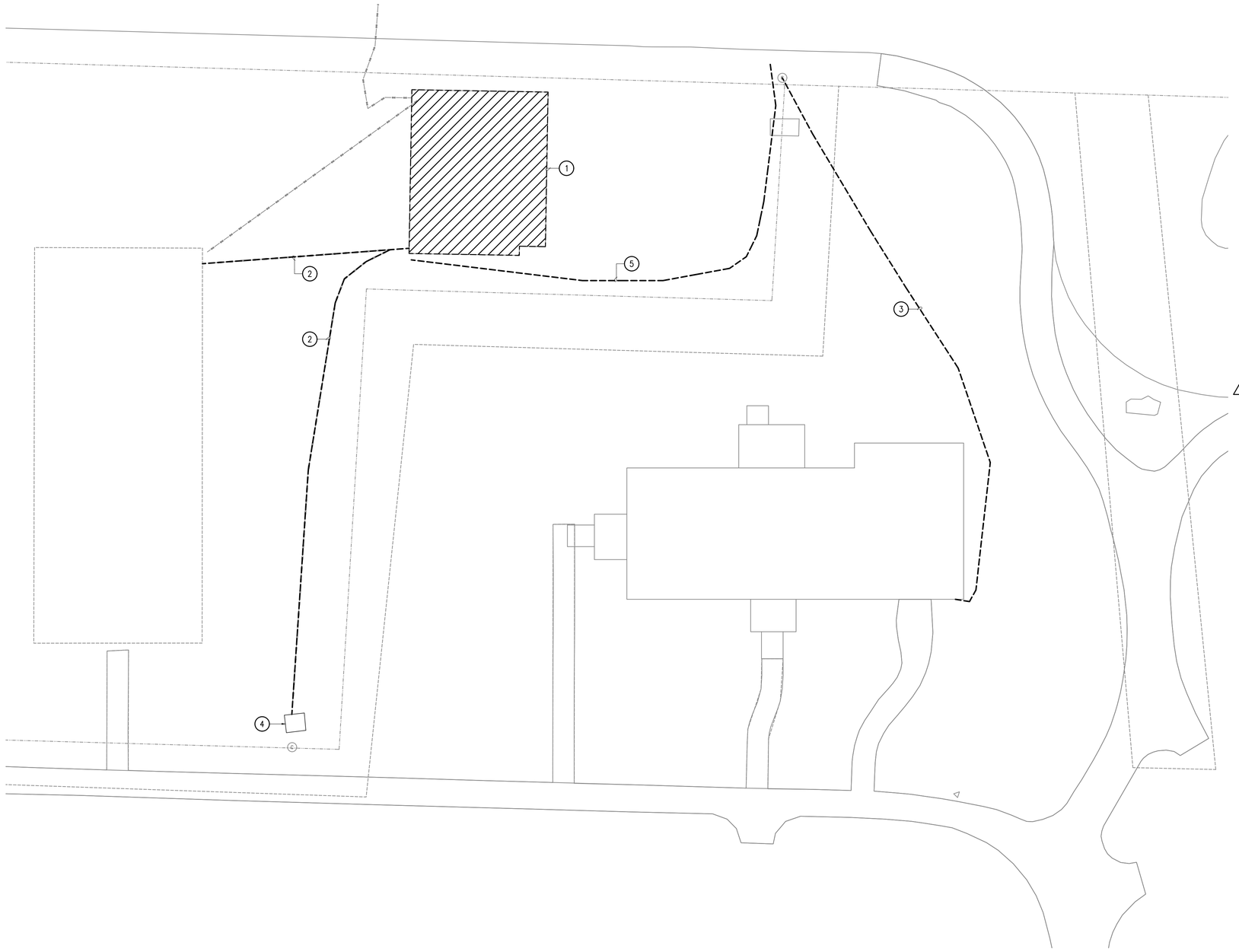
Sheet Contents
ELECTRICAL LEGEND,
FIXTURE SCHEDULE

Sheet No.
E0.01

Plot Date Time: 4/23/2021 9:30:21 AM



GENERAL NOTES

1. ELECTRICAL CONTRACTOR TO ASSIST WITH DE-ENERGIZATION AND DISCONNECTION OF EXISTING CONDUCTORS TO ACCOMMODATE DEMOLITION OF EXISTING STRUCTURES ON THE SITE.
2. SEE SHEET D001, AND C1 FOR LOCATIONS, DETAILS, AND ADDITIONAL INFORMATION ON SITE DEMOLITION WORK.

SHEET NOTES

INDICATED BY: (#)

1. DEMOLISH ALL EXISTING ELECTRICAL ASSOCIATED WITH EXISTING CABIN BUILDING TO BE REMOVED.
2. DEMOLISH EXISTING UNDERGROUND POWER LINE FOR STRUCTURES TO BE DEMOLISHED. COORDINATE WITH UTILITY FOR DE-ENERGIZING OF SERVICE LATERAL CONDUCTORS PRIOR TO BEGINNING DEMOLITION WORK.
3. (1) CONTRACTOR SHALL COORDINATE EXISTING UNDERGROUND COMM LINE RELOCATION DUE TO EXISTING ROUTING UNDER NEW BUILDING ADDITION WITH ACS UTILITY COMPANY. UTILITY COMPANY SHALL RE-ROUTE AND RE-USE EXISTING COMM LINE OR RE-ROUTE AND REPLACE AS NECESSARY. OWNER SHALL PAY UTILITY COMPANY DIRECTLY FOR THIS WORK SCOPE. SEE DRAWING E0.03 AND CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
4. EXISTING UTILITY TRANSFORMER TO REMAIN.
5. DEMOLISH EXISTING UNDERGROUND COMMUNICATIONS LINE FOR STRUCTURE TO BE DEMOLISHED. COORDINATE WITH UTILITY PRIOR TO BEGINNING WORK.

1 / E0.02 ELECTRICAL SITE PLAN - DEMOLITION

SCALE: 3/32" = 1'-0"

N

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ELECTRICAL SITE PLAN DEMOLITION

Sheet No.
E0.02

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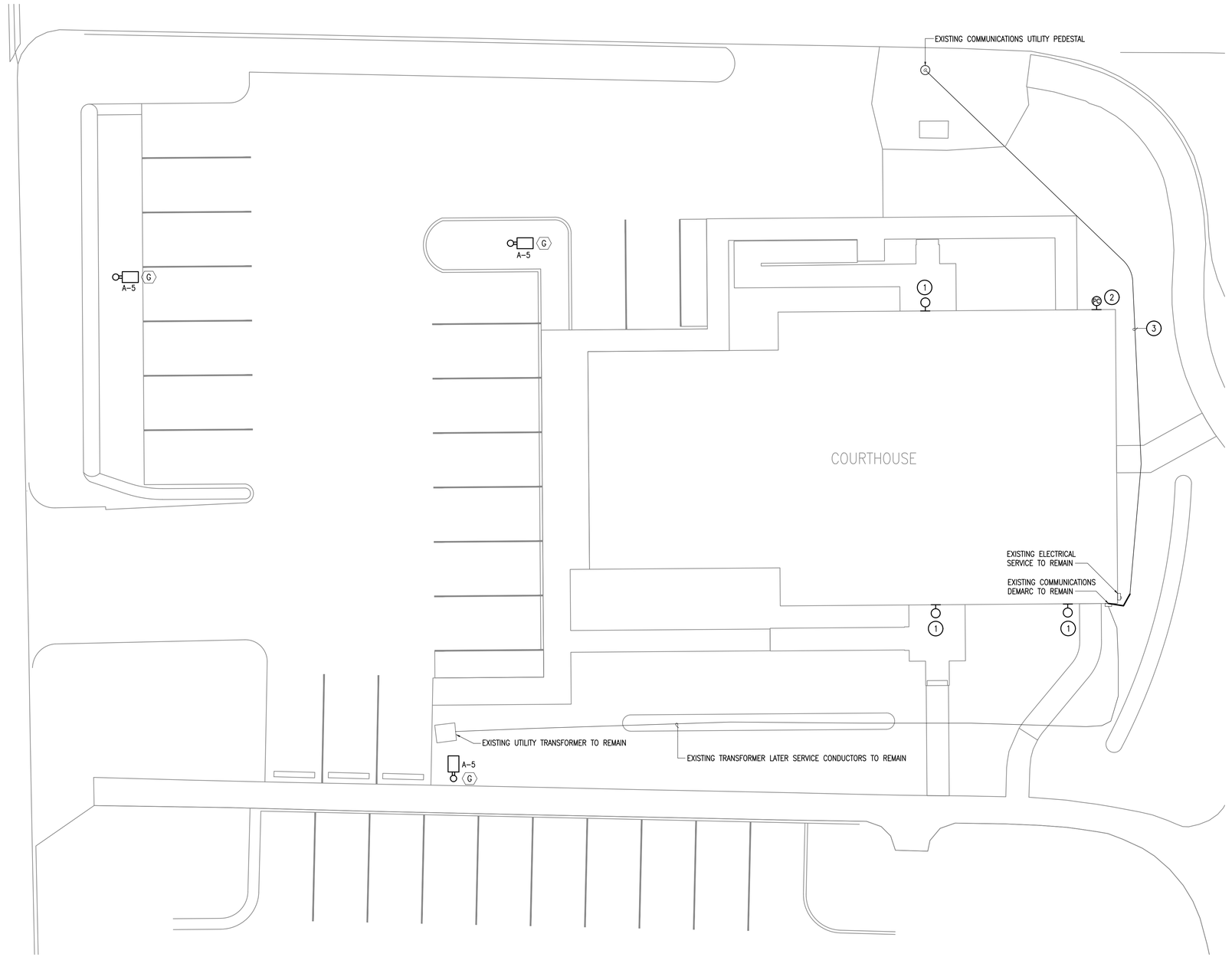


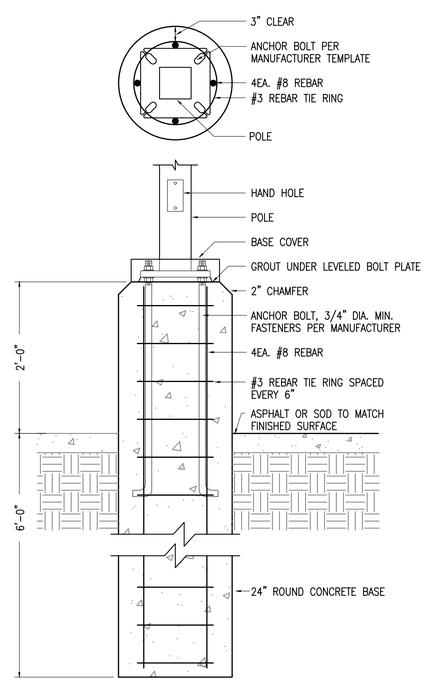
1 ELECTRICAL SITE PLAN
E0.03 SCALE: 3/32" = 1'-0"

GENERAL NOTES

1. PROVIDE #10 AWG CONDUCTORS FOR ALL SITE LIGHTING BRANCH CIRCUITS.

SHEET NOTES
INDICATED BY: (#)

1. WALL MOUNTED LIGHT FIXTURES SHOWN HERE FOR REFERENCE ONLY. SEE DETAIL 1/E2.01 FOR FIXTURE TYPES, BRANCH CIRCUITRY AND CONTROLS INFORMATION.
2. PHOTOCELL FOR CONTROL OF EXTERIOR LIGHTING. SEE DETAIL 1/E2.01 FOR ADDITIONAL INFORMATION.
3. (1) CONTRACTOR SHALL COORDINATE PROPOSED RE-ROUTING OF UNDERGROUND COMM LINE WITH ACS UTILITY COMPANY. SEE DRAWING E0.02 AND CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.



1 POLE BASE DETAIL
E0.03 SCALE: NO SCALE

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Sheet No.
E0.03

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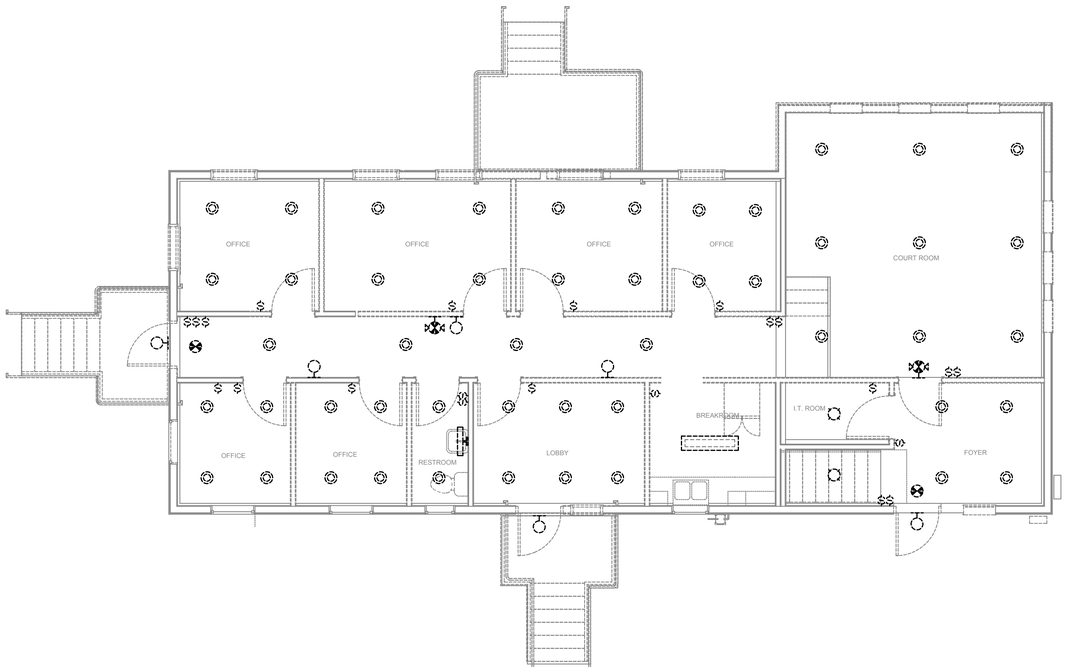

1 E1.01 LIGHTING DEMOLITION PLAN - FIRST FLOOR

SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. ALL DEVICES SHOWN ON THIS PLAN ARE TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
2. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL SALVAGEABLE MATERIAL. THE CONTRACTOR SHALL DISPOSE OF ALL UNWANTED MATERIAL OFF OF THE SITE.

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Sheet Contents
LIGHTING
DEMOLITION PLAN
FIRST FLOOR

Sheet No.
E1.01

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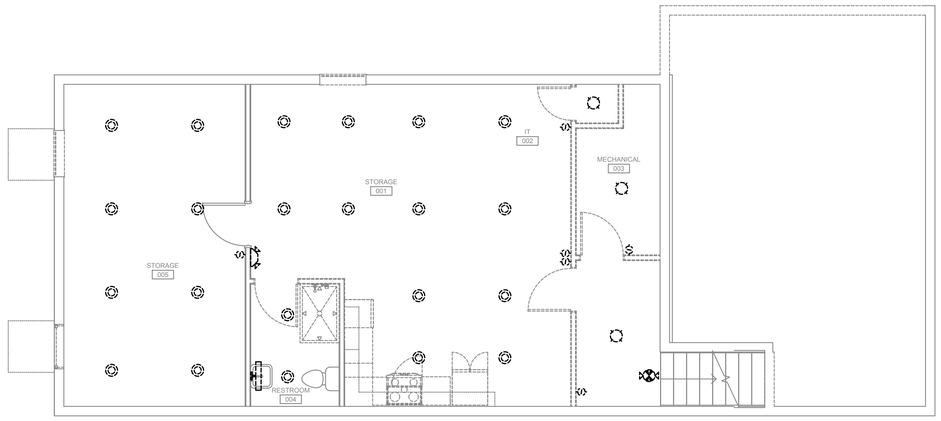

1 LIGHTING DEMOLITION PLAN - BASEMENT
E1.02 SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. ALL DEVICES SHOWN ON THIS PLAN ARE TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
2. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL SALVAGEABLE MATERIAL. THE CONTRACTOR SHALL DISPOSE OF ALL UNWANTED MATERIAL OFF OF THE SITE.

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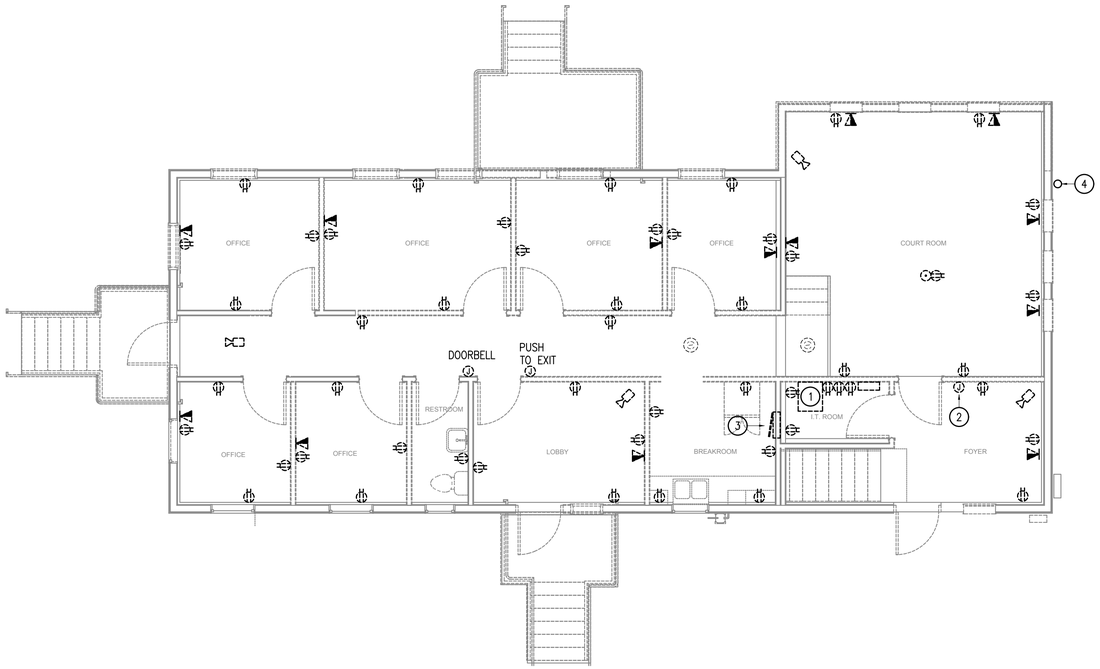

1 POWER AND SIGNAL DEMOLITION PLAN - FIRST FLOOR

E1.03 SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. REMOVE ALL EXISTING DATA CABLING IN THE BUILDING IN ITS ENTIRETY.
2. ALL DEVICES SHOWN ON THIS PLAN ARE TO BE DEMOLISHED UNLESS NOTED OTHERWISE.

SHEET NOTES

INDICATED BY: (#)

1. DISCONNECT EXISTING DATA CABLING FROM EXISTING CHATSWORTH 2-POST TELECOMMUNICATIONS RACK AND SALVAGE RACK FOR RE-USE. EXISTING TELECOMMUNICATIONS RACK TO BE RELOCATED TO NEW I.T. ROOM. SEE 1/E3.02 FOR NEW LOCATION.
2. EXISTING TIME CLOCK SYSTEM TO BE REMOVED AND RE-USED SEE POWER REMODEL PLAN FOR ADDITIONAL INFORMATION.
3. EXISTING ELECTRICAL PANEL TO BE REMOVED. ALL EXISTING BRANCH CIRCUITRY TO BE DEMOLISHED.
4. EXISTING COMMUNICATION DISH TO BE REMOVED AND RE-MOUNTED SEE POWER REMODEL PLANS FOR ADDITIONAL INFORMATION.

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POWER AND SIGNAL DEMOLITION PLAN FIRST FLOOR

Sheet No.
E1.03

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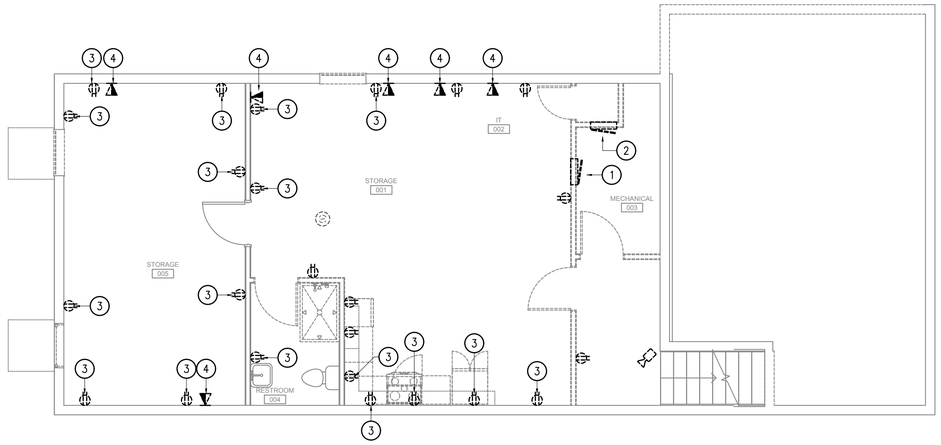

1 POWER AND SIGNAL DEMOLITION PLAN - BASEMENT

E1.04 SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. REMOVE ALL EXISTING DATA CABLING IN THE BUILDING IN ITS ENTIRETY.
2. ALL DEVICES SHOWN ON THIS PLAN ARE TO BE DEMOLISHED UNLESS NOTED OTHERWISE.

SHEET NOTES

INDICATED BY: (1)

1. EXISTING TELECOMMUNICATION GEAR TO BE DEMOLISHED.
2. EXISTING ELECTRICAL PANEL TO BE REMOVED. ALL EXISTING BRANCH CIRCUITRY TO BE DEMOLISHED.
3. EXISTING RECEPTACLE TO BE RE-CIRCUITED TO NEW PANEL. SALVAGE EXISTING BRANCH CIRCUITRY TO THE EXTENT POSSIBLE. SEE POWER PLANS FOR ADDITIONAL INFORMATION.
4. EXISTING DATA OUTLET TO BE ABANDONED. REMOVE EXISTING DATA CABLING AND PROVIDE BLANK FACE COVER PLATE.

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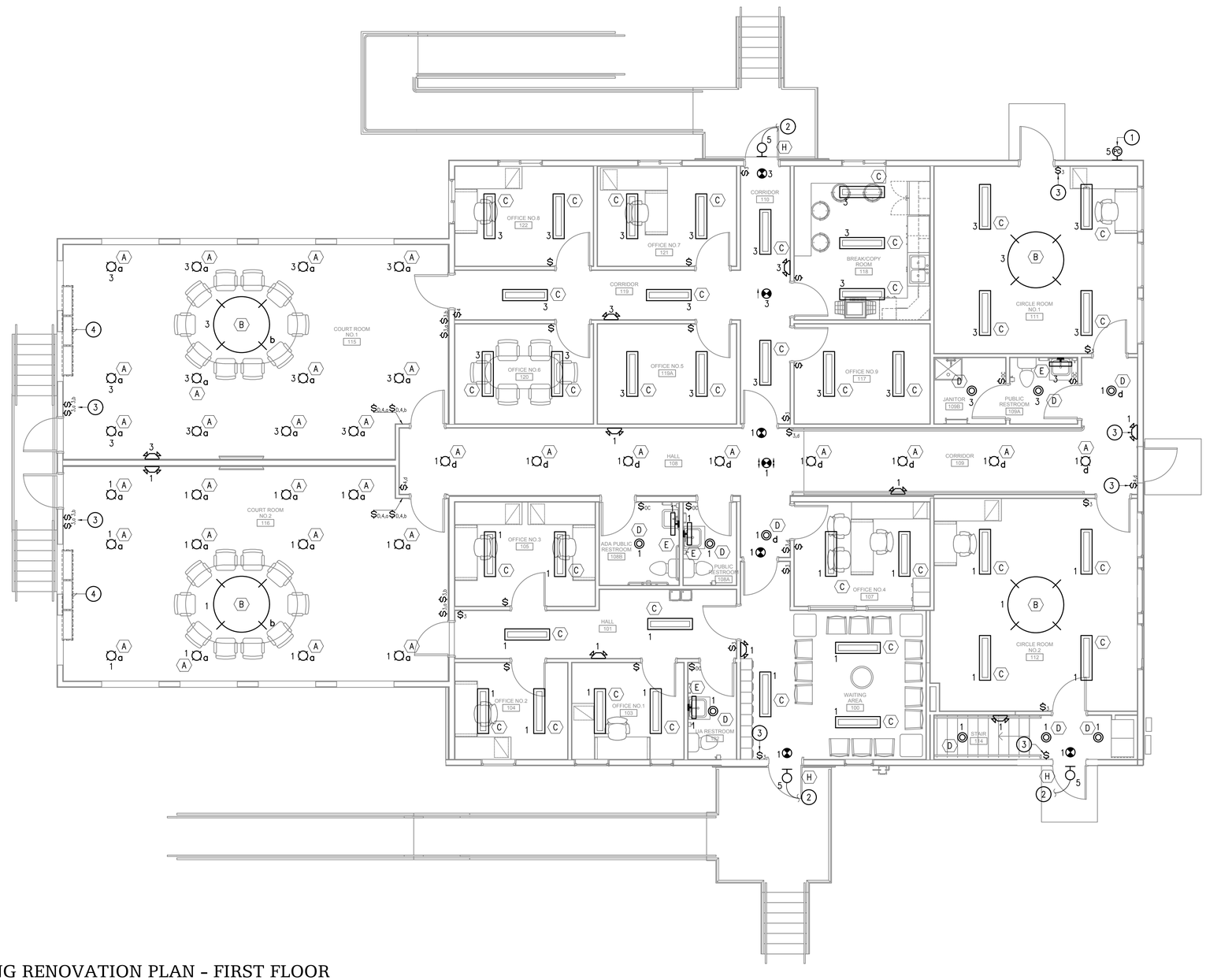

1 LIGHTING RENOVATION PLAN - FIRST FLOOR
E2.01 SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. COORDINATE EXACT LOCATIONS OF LIGHT FIXTURES TO AVOID CONFLICT WITH MECHANICAL DUCTWORK, PIPING, ARCHITECTURAL, AND STRUCTURAL ELEMENTS.
2. ALL LIGHTING BRANCH CIRCUITS SHOWN TO BE ROUTED TO PANEL A UNLESS OTHERWISE NOTED.

SHEET NOTES

INDICATED BY: (#)

1. PHOTOCELL FOR AUTOMATIC ON/OFF CONTROL OF EXTERIOR LIGHTING. FIELD LOCATE PER MANUFACTURER INSTALLATION INSTRUCTIONS. CONNECT TO EXTERIOR LIGHTING BRANCH CIRCUIT A-5.
2. FIXTURE SHALL BE NORMALLY ON/OFF CONTROLLED AUTOMATICALLY VIA PHOTOCELL. UPON NORMAL POWER FAILURE, FIXTURE TO BE PROVIDED EMERGENCY POWER VIA EMERGENCY LIGHTING INVERTER LOCATED IN BASEMENT. SEE SHEET E2.02 FOR ADDITIONAL INFORMATION.
3. ALL VAPOR BARRIER PENETRATIONS SHALL BE SEALED TO MAINTAIN A CONTINUOUS BARRIER TO AIR INFILTRATION.
4. SEE POWER PLAN SHEET E3.01 FOR DISPLAY CASE LIGHTING.

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RENOVATION PLAN
FIRST FLOOR

Sheet No.
E2.01

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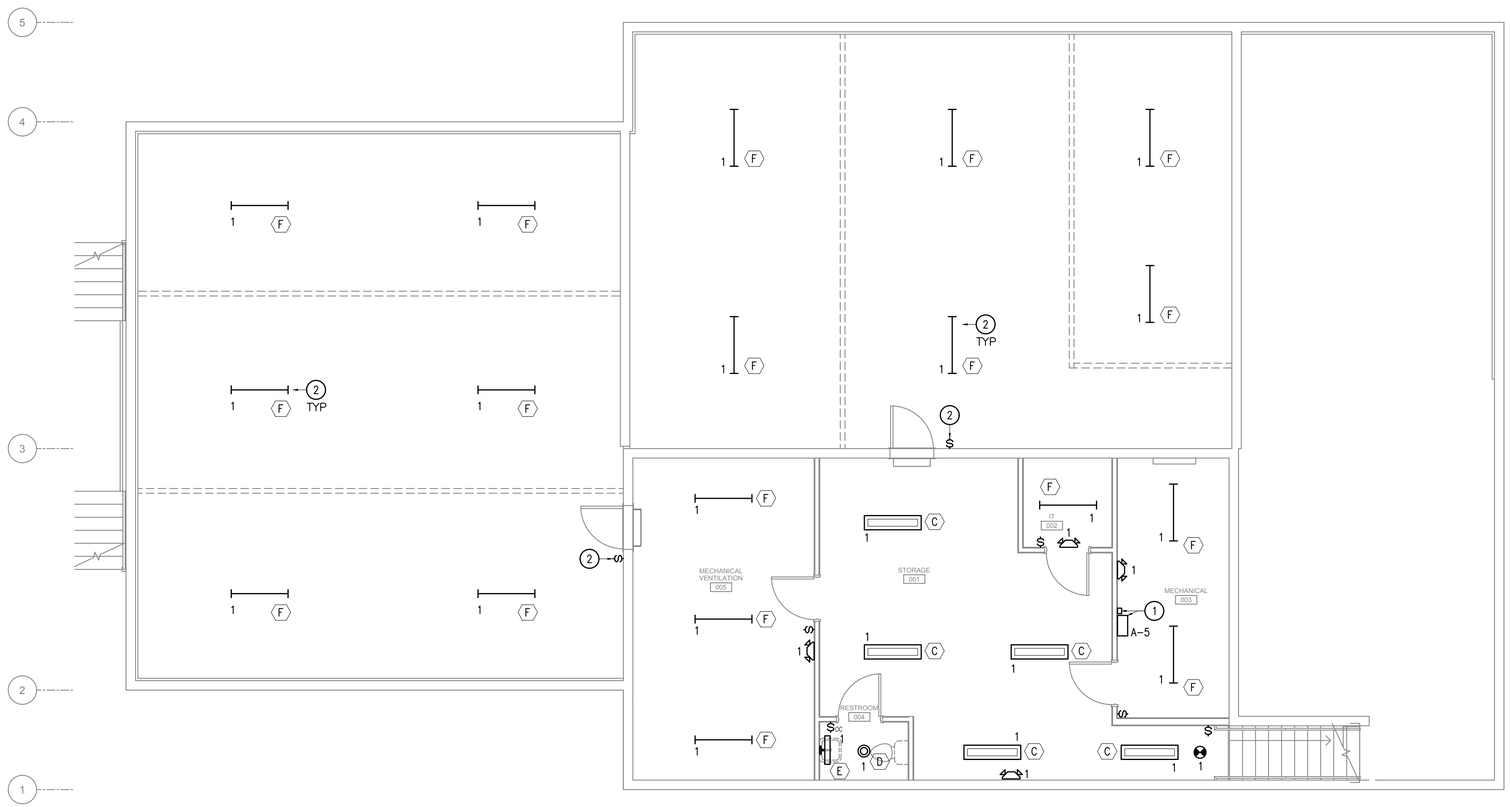

1 LIGHTING RENOVATION PLAN - BASEMENT

E2.02 SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. COORDINATE EXACT LOCATIONS OF LIGHT FIXTURES TO AVOID CONFLICT WITH MECHANICAL DUCTWORK, PIPING, ARCHITECTURAL, AND STRUCTURAL ELEMENTS.
2. ALL LIGHTING BRANCH CIRCUITS SHOWN TO BE ROUTED TO PANEL B UNLESS OTHERWISE NOTED.

SHEET NOTES

INDICATED BY: (#)

1. PROVIDE EVENLITE #PW-12-LC-V1 LOCATED IN THE BASEMENT MECHANICAL ROOM TO SUPPLY EMERGENCY POWER TO EXTERIOR LIGHT FIXTURE FOR EXIT DISCHARGE LIGHTING. PROVIDE UL924 RELAY, PHILIPS BODINE #GTD EMERGENCY LIGHTING CONTROL DEVICE TO BYPASS PHOTOCELL CONTROLS UPON NORMAL POWER FAILURE. MOUNT BYPASS RELAY ADJACENT TO EMERGENCY LIGHTING INVERTER IN MECHANICAL ROOM.
2. PROVIDE TYPE 'F' LIGHT FIXTURES FOR CRAWLSPACE LIGHTING. CONNECT ALL CRAWLSPACE LIGHT FIXTURES TO LOAD SIDE OF GFCI RECEPTACLE IN CRAWLSPACE SHOWN ON POWER PLAN. FIELD LOCATE LIGHT FIXTURES FOR OPTIMAL LIGHTING COVERAGE. FIELD LOCATE CRAWLSPACE LIGHT SWITCH IN ACCESSIBLE LOCATION.

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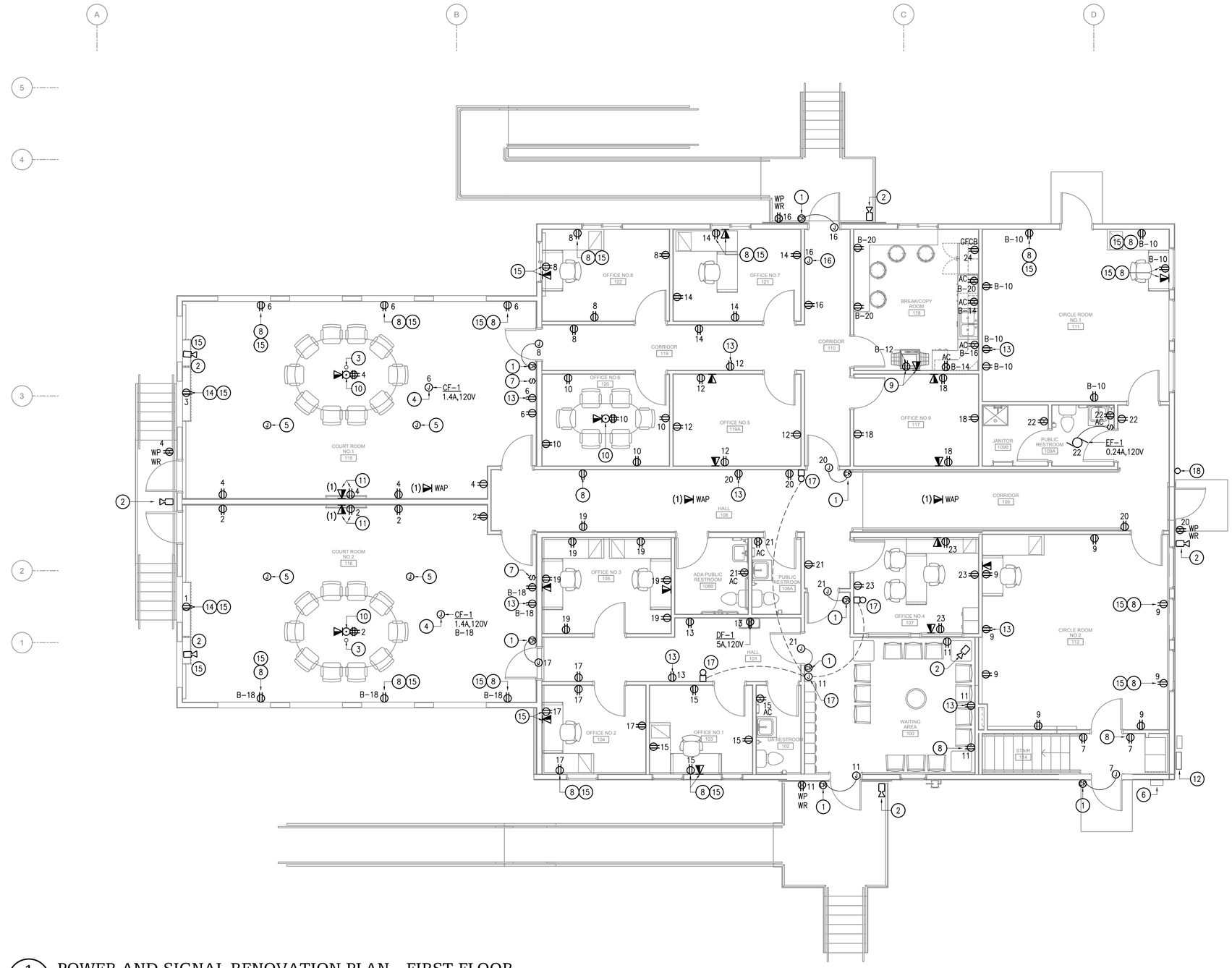
Sheet Contents
LIGHTING
RENOVATION PLAN
BASEMENT

Sheet No.
E2.02

Plot Date Time: 4/23/2021 9:30:21 AM



1 POWER AND SIGNAL RENOVATION PLAN - FIRST FLOOR
E3.01 SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. ALL TELECOMMUNICATIONS OUTLETS SHOWN SHALL RECEIVE (2)–CAT6 JACKS/CABLES UNLESS OTHERWISE INDICATED BY QUANTITY IN PARENTHESIS (#). ALL CABLES SHALL BE PULLED TO NEW PATCH PANELS LOCATED IN TELECOMMUNICATIONS RACK IN I.T. ROOM. SEE SHEET NOTE #1, THIS SHEET FOR CCTV CAMERA CABLING REQUIREMENTS. COORDINATE WITH ACS ALASKA FOR DISCONNECTION AND RE–CONNECTION OF EXISTING ANALOG TELEPHONE SERVICE TO THE BUILDING. SEE SITE DEMOLITION AND RENOVATION SITE PLAN FOR ADDITIONAL INFORMATION.
2. ALL BRANCH CIRCUITS SHOWN TO BE ROUTED TO PANEL A UNLESS OTHERWISE NOTED.
3. CONFIRM INSTALLATION REQUIREMENTS FOR OWNER FURNISHED CONTRACTOR INSTALLED COURTROOM AUDIO/VIDEO RECORDING SYSTEM PRIOR TO ROUGH–IN.
4. CONTRACT WITH KENAITZE'S PREFERRED VENDORS INTEGRATED COMMUNICATIONS DESIGNS, CONVERGINT TECHNOLOGIES AND INCORPORATE THEIR CONSTRUCTION SCHEDULES INTO THE OVERALL PROJECT CONSTRUCTION SCHEDULE. SEE ICD AND CONVERGINT TECHNOLOGIES SPECIAL SYSTEMS PROPOSALS FOR ADDITIONAL INFORMATION RELATING TO THE VENDOR PROVIDED SCOPE OF WORK AND MATERIALS TO PROVIDE COMPLETE AND OPERABLE SPECIAL SYSTEMS PACKAGE.

SHEET NOTES

INDICATED BY: (#)

1. PROVIDE ROUGH–IN FOR ACCESS CONTROL SYSTEM CARD READER DOOR. CONDUIT AND JUNCTION BOXES TO BE PROVIDED BY CONTRACTOR. INSTALLATION OF LOW–VOLTAGE WIRING AND CARD READERS TO BE BY ATS ALASKA. COORDINATE INSTALLATION REQUIREMENTS WITH ATS ALASKA SHOP DRAWINGS PRIOR TO ROUGH–IN.
2. PROVIDE (1) CAT–6 POWER OVER ETHERNET (POE) CABLE FOR CONNECTION TO CCTV CAMERA. LEAVE 5' COIL OF CABLING FOR INSTALLATION AT DESIRED LOCATION. PROVIDE UNIQUE LABEL FOR ALL CCTV CAMERA CABLES AT IT RACK LOCATION TO DIFFERENTIATE CCTV CABLING FROM ALL OTHER NETWORK CABLING. CCTV SYSTEM TO BE SUPPLIED AND INSTALLED BY INTEGRATED COMMUNICATIONS DESIGNS, INC.
3. PROVIDE CONDUIT 1¼" CONDUIT STUB–UP AT COURTROOM TABLE LOCATION TO ACCOMMODATE OWNER FURNISHED AUDIO/VIDEO RECORDING SYSTEM. SEE ALSO GENERAL NOTE #3, THIS SHEET.
4. PROVIDE FAN RATED BOX AND CIRCUITRY FOR CEILING FAN. COORDINATE LOCATION WITH MECHANICAL PRIOR TO ROUGH IN. PROVIDE CONNECTION TO SWITCH. SEE SHEET NOTE 7, THIS SHEET.
5. CEILING MOUNTED MICROPHONE FOR AUDIO FEED TO COURT CLERK. PROVIDE CABLING AS NEEDED BETWEEN COURT CLERK AND MICROPHONE. SEE ALSO GENERAL NOTE 3, THIS SHEET.
6. EXISTING ACS DEMARCATION POINT. PROVIDE NEW CABLING FROM DEMARCATION CABLING TO BE PULLED AND RECONNECTED TO TELECOMMUNICATIONS RACK IN NEW I.T. ROOM.
7. SWITCH FOR CEILING FANS IN COURTROOM. COORDINATE LOCATION WITH MECHANICAL AND TENANT PRIOR TO INSTALLATION.
8. COORDINATE HEIGHT OF DEVICE TO AVOID CONFLICT WITH MECHANICAL BASEBOARD.
9. PROVIDE 20A,120V DUPLEX RECEPTACLE ON DEDICATED CIRCUIT AND DATA OUTLET FOR COPIER IN BREAK ROOM.
10. PROVIDE POKE THROUGH FLOOR BOX WITH (2) DATA JACKS/CABLES AND TWO 20A,120VAC DUPLEX RECEPTACLES.
11. PROVIDE 20A,120V DUPLEX RECEPTACLE AND DATA OUTLET WITH (1) DATA JACK/CABLE FOR CONNECTION TO WALL MOUNTED MONITOR. COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH MONITOR MOUNTING BRACKET PRIOR TO ROUGH–IN.
12. EXISTING SERVICE ENTRANCE EQUIPMENT. SEE 1/E5.01 FOR MORE DETAILS.
13. PROVIDE DUPLEX RECEPTACLE AT +7' A.F.F.
14. PROVIDE 20A,120V DUPLEX RECEPTACLE FOR CONNECTION TO DISPLAY CASE LIGHTING. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH–IN.
15. ALL VAPOR BARRIER PENETRATIONS SHALL BE SEALED TO MAINTAIN A CONTINUOUS BARRIER TO AIR INFILTRATION.
16. NEW LOCATION OF TIME CLOCK. TIME CLOCK TO BE MOUNTED +4'–6" A.F.F. CONFIRM EXACT LOCATION WITH OWNER PRIOR TO ROUGH–IN.
17. PROVIDE JUNCTION BOX FOR CONNECTION TO DOORBELL SYSTEM. PROVIDE SIGN TO READ 'RING BELL FOR ASSISTANCE'. CONFIRM EXACT REQUIREMENTS PRIOR TO ROUGH–IN.
18. NEW LOCATION OF COMMUNICATION DISH. MOUNT COMMUNICATION DISH AS HIGH AS PRACTICAL ON WALL. PROVIDE NEW 3/4" CONDUIT WITH (1)–CAT6 CABLE TO IT RACK IN BASEMENT. CONFIRM EXACT LOCATION WITH OWNER'S IT REPRESENTATIVE PRIOR TO RE–INSTALLATION.

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7/16/2021
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TRIBAL COURTHOUSE

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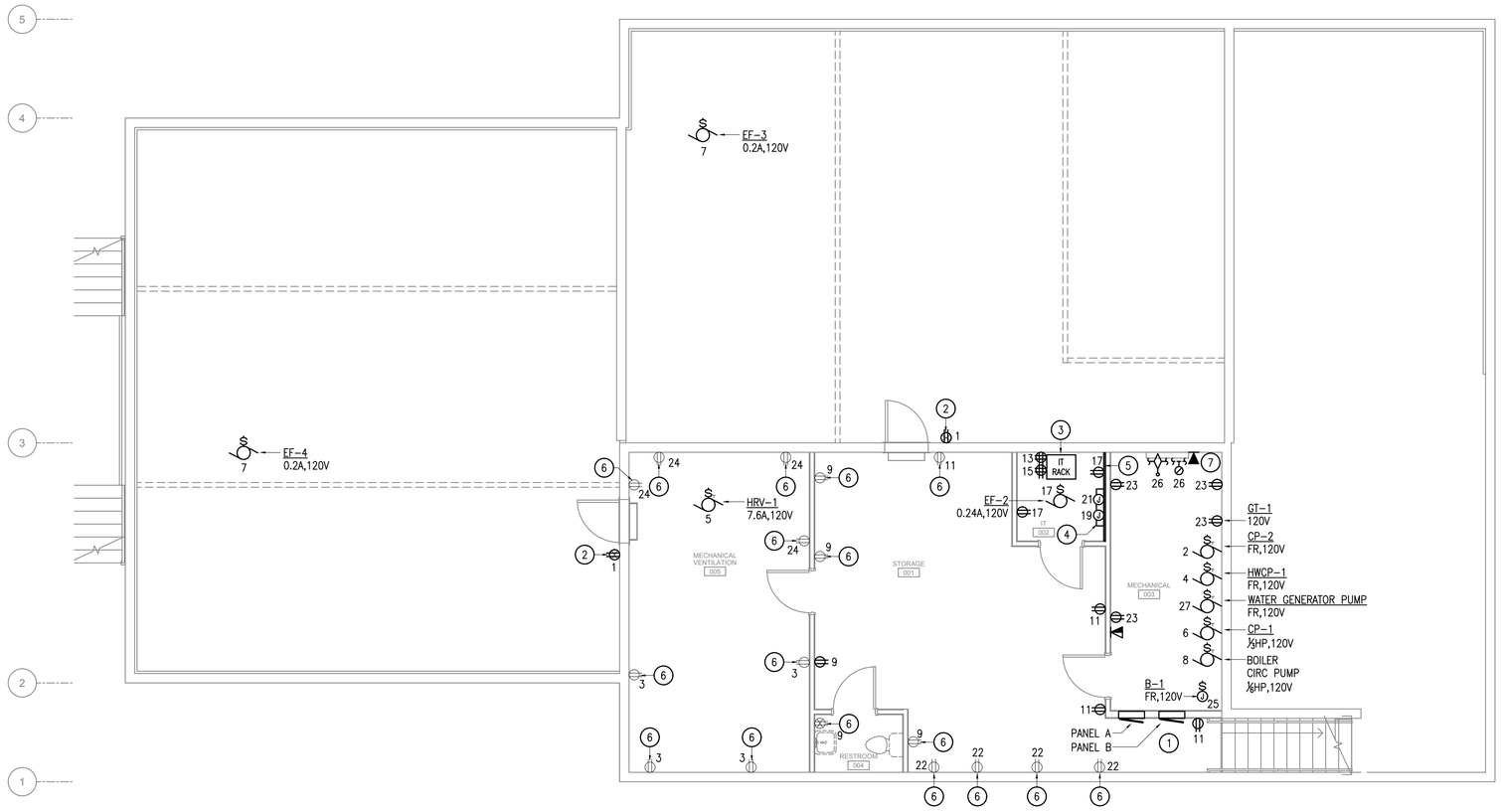
Revisions		
No.	Description	Date
1	REV 1	12-17-2021

Drawn by BCM	Date 07-16-2021
Checked BCM	Job No. 2021.021

Sheet Contents
POWER AND SIGNAL RENOVATION PLAN FIRST FLOOR

Sheet No.
E3.01

Plot Date Time: 4/23/2021 9:30:21 AM



1 POWER AND SIGNAL RENOVATION PLAN - BASEMENT

E3.02 SCALE: 3/16" = 1'-0"

GENERAL NOTES

1. ALL TELECOMMUNICATIONS OUTLETS SHOWN SHALL RECEIVE (2)–CAT6 JACKS/CABLES UNLESS OTHERWISE INDICATED BY QUANTITY IN PARENTHESIS (#). ALL CABLES SHALL BE PULLED TO PATCH PANELS LOCATED IN TELECOMMUNICATIONS RACK IN I.T. ROOM.
2. ALL BRANCH CIRCUITS SHOWN TO BE ROUTED TO PANEL B UNLESS OTHERWISE NOTED.

SHEET NOTES

INDICATED BY: (#)

1. PROPOSED LOCATION FOR NEW ELECTRICAL PANELS, PANEL A AND PANEL B. COORDINATE EXACT LOCATION PRIOR TO ROUGH–IN.
2. GFCI RECEPTACLE IN CRAWLSPACE. CONNECT CRAWLSPACE LIGHTING TO LOAD SIDE OF GFCI RECEPTACLE. SEE LIGHTING PLAN FOR ADDITIONAL INFORMATION.
3. EXISTING TELECOMMUNICATIONS RACK TO BE RELOCATED TO NEW IT ROOM IN BASEMENT.
4. PROVIDE (2)–20A,120VAC DEDICATED CIRCUITS FOR ACCESS CONTROL SYSTEM POWER SUPPLIES. COORDINATE EXACT LOCATION WITH ATS ALASKA.
5. PLYWOOD BACKING FOR MOUNTING OF EQUIPMENT ON IT ROOM WALLS.
6. EXISTING RECEPTACLE TO BE REMAIN. CAPTURE EXISTING BRANCH CIRCUITY AND EXTEND TO NEW PANEL BRANCH CIRCUIT INDICATED.
7. PROVIDE ANALOG COMMUNICATIONS LINES TO SPRINKLER SYSTEM DIALER FOR MONITORING OF SPRINKLER TAMPER SWITCH AND FLOW SWITCH.

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POWER AND SIGNAL RENOVATION PLAN BASEMENT

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ELECTRICAL SPECIFICATIONS

GENERAL CONDITIONS – PROVIDE AND INSTALL ALL LABOR, MATERIAL, AND EQUIPMENT FOR A COMPLETE AND PROPERLY OPERABLE ELECTRICAL SYSTEM AS DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS. ALL WORK SHALL BE PERFORMED IN A NEAT AND PROFESSIONAL MANNER USING GOOD ENGINEERING PRACTICES. ALL NEW WORK AND EXISTING WORK MODIFIED BY THIS PROJECT SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, NFPA, INTERNATIONAL BUILDING CODE, AND INTERNATIONAL FIRE CODE INCLUDING ALL STATE AND LOCAL CODES AND AMENDMENTS. THIS CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS.

THE CONSTRUCTION DRAWINGS ARE DIAGRAMMATIC, NOT NECESSARILY SHOWING ALL FEATURES OR EXACT LOCATIONS OF FIXTURES, EQUIPMENT, ETC. UNLESS SPECIFICALLY NOTED OTHERWISE. THE CONTRACTOR SHALL REVIEW THE DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT TO BE PROVIDED BY OTHER DIVISIONS AND REQUIRING INSTALLATION AND/OR CONNECTION IN ACCORDANCE WITH THIS SECTION. APPARENT CONFLICTS BETWEEN PLANS AND SPECIFICATIONS, GOVERNING CODES OR UTILITIES REGULATIONS AS WELL AS UNCLEAR DIRECTIVES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. CODES, ORDINANCES, REGULATIONS, MANUFACTURER'S INSTRUCTIONS OR OTHER ESTABLISHED STANDARDS SHALL TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT OR CONFLICT WITH THE DRAWINGS AND SPECIFICATIONS.

INSTALLATION OF ALL WORK SHALL BE PROVIDED SO THAT ALL COMPONENT PARTS SHALL FUNCTION AS AN INTEGRATED SYSTEM COMPLETE WITH ALL ASSOCIATED EQUIPMENT NECESSARY FOR PROPER OPERATION. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED TO ENSURE CONFORMANCE WITH APPLICABLE INDUSTRY STANDARDS, NEMA STANDARDS AND UNDERWRITERS LABORATORIES STANDARDS WHERE APPLICABLE.

MARK UP A CLEAN SET OF RECORD DRAWINGS AS THE WORK PROGRESSES TO SHOW THE DIMENSIONED LOCATION OF ALL ELECTRICAL WORK WHICH WILL BECOME PERMANENTLY CONCEALED. SHOW ROUTING OF WORK IN PERMANENTLY CONCEALED BLIND SPACES WITHIN THE BUILDING. SHOW COMPLETE ROUTING AND SIZING OF ANY REVISIONS TO THE SYSTEMS SHOWN ON THE CONSTRUCTION DRAWINGS.

PROVIDE MATERIAL AND EQUIPMENT SUBMITTALS CONTAINING A COMPLETE LISTING OF MATERIAL AND EQUIPMENT SHOWN ON THE DRAWINGS. INCLUDE CATALOG NUMBERS, WIRING DIAGRAMS, DIMENSIONS AND PERFORMANCE DATA FOR ALL MATERIAL AND EQUIPMENT. SUBMITTALS SHALL BE BOUND IN A HARD COVER, LOOSE-LEAF BINDER, SEPARATED FROM SUBMITTAL INFORMATION PROVIDED UNDER OTHER DIVISIONS. INDEX AND CLEARLY IDENTIFY ALL MATERIAL AND EQUIPMENT BY PART NUMBER, NAME OR DESIGNATION REFERENCED ON THE DRAWINGS. SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE SUBMITTALS ARE NOT REVIEWED FOR MATERIAL QUANTITIES, DIMENSION, OR FOR PROPER OPERATION. WHERE DEVIATIONS OF A SUBSTITUTE PRODUCT OR SYSTEM PERFORMANCE HAVE NOT BEEN SPECIFICALLY NOTED AND FULLY DESCRIBED IN THE SUBMITTAL BY THE CONTRACTOR, PROVISIONS OF A COMPLETE AND SATISFACTORY OPERABLE INSTALLATION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

PROVIDE A COMPLETE DISTRIBUTION SYSTEM INCLUDING SERVICE, MAIN DISTRIBUTION EQUIPMENT, FEEDERS, BRANCH CIRCUIT PANELS, BRANCH CIRCUITS, JUNCTION BOXES, OUTLET BOXES, WIRING DEVICES, COVERPLATES, CONDUIT, ETC. PROVIDE EQUIPMENT THAT IS RATED FOR AVAILABLE FAULT CURRENT LEVELS. PROVIDE GROUND FAULT PROTECTION AS REQUIRED BY THE NEC FOR EACH DISCONNECTING MEANS RATED 480 VOLT AND 1000 AMPS OR GREATER. THE RATING OF THE DISCONNECT SHALL BE CONSIDERED TO BE THE RATING OF THE LARGEST FUSE THAT CAN BE INSTALLED OR THE HIGHEST CONTINUOUS CURRENT TRIP SETTING FOR WHICH THE ACTUAL OVERCURRENT DEVICE INSTALLED IN A CIRCUIT BREAKER IS RATED OR CAN BE ADJUSTED.

OPERATION AND MAINTENANCE MANUALS – PROVIDE OPERATION AND MAINTENANCE MANUALS SUITABLE FOR TRAINING OF THE OWNER'S PERSONNEL. FULLY DESCRIBE THE PROCEDURES NECESSARY TO OPERATE EACH SYSTEM INCLUDING START-UP, OPERATION, EMERGENCY OPERATION SHUTDOWN. PROVIDE INSTRUCTIONS AND AN ITEMIZED SCHEDULE OF PREVENTIVE MAINTENANCE IN TABULAR FORM FOR ALL ROUTINE CLEANING, INSPECTION AND OTHER MANUFACTURER RECOMMENDED MAINTENANCE. PROVIDE INSTRUCTIONS FOR MINOR REPAIR OR ADJUSTMENTS REQUIRED FOR PREVENTIVE MAINTENANCE. PROVIDE MANUFACTURER'S DESCRIPTIVE LITERATURE INCLUDING APPROVED SHOP DRAWINGS COVERING DEVICES USED IN ANY CONTRACTOR-PROVIDED EQUIPMENT OR SYSTEMS WITH DRAWINGS, WIRING DIAGRAMS, PARTS LIST, ETC.

WARRANTY – THE CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS PROVIDED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS, PROPER OPERATION AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM OWNER OCCUPANCY. FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER DURING THE GUARANTEE PERIOD.

PERMITS – PROCURE AND PAY FOR ALL FEES, PERMITS, REVIEWS, ETC. REQUIRED BY LOCAL AND STATE AGENCIES AND ALL LOCAL UTILITY COMPANIES. COSTS OF COMMERCIAL UTILITY LINE EXTENSIONS TO THE SYSTEM METER ARE TO BE PAID BY THE OWNER.

REFERENCE SYMBOLS – THE ELECTRICAL "LEGEND" ON THE DRAWINGS IS A STANDARDIZED VERSION, AND ALL SYMBOLS SHOWN MAY NOT BE USED FOR THIS PROJECT. USE THE ELECTRICAL "LEGEND" AS A REFERENCE FOR THE SYMBOLS USED ON THE PROJECT DRAWINGS.

IDENTIFICATION – PROVIDE ENGRAVED LAMINATED PLASTIC NAMEPLATES WITH WHITE LETTERS ON A BLACK BACKGROUND WHERE REQURIED BY THE NEC AND TO IDENTIFY ALL ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT AND LOADS SERVED. LETTER HEIGHTS SHALL BE 1/8 INCH FOR INDIVIDUAL SWITCHES, MOTOR STARTERS AND LOADS SERVED. LETTER HEIGHTS SHALL BE 1/4 INCH FOR PANELBOARDS AND SWITCHBOARDS. SECURE NAMEPLATES TO EQUIPMENT FRONTS USING SCREWS, RIVETS OR ADHESIVES. SECURE NAMEPLATE TO INSIDE FACE OF RECESSED PANELBOARD DOORS IN FINISHED LOCATIONS.

WIRING DEVICES: PROVIDE MACHINE PRINTED AND LAMINATED ADHESIVE LABELS, WITH 3/16" BLACK LETTERS ON CLEAR BACKGROUND TO IDENTIFY WIRING DEVICES SUCH AS SWITCHES, FRACTIONAL HORSEPOWER MOTOR STARTER SWITCHES, AND RECEPTACLES. LABEL SHALL INCLUDE SUPPLY PANEL AND CIRCUIT.

CONDUITS: IDENTIFY THE CIRCUIT NUMBERS OF THE BRANCH CIRCUIT CONDUCTORS CONTAINED INSIDE ALL CONDUITS ENTERING OR LEAVING PANELBOARDS WITH INDELIBLE BLACK MARKING PEN OR OTHER PERMANENT MEANS.

JUNCTION BOXES: IDENTIFY THE CIRCUIT NUMBERS OF THE BRANCH CIRCUIT CONDUCTORS CONTAINED INSIDE EACH JUNCTION BOX WITH INDELIBLE BLACK MARKING PEN OR OTHER PERMANENT MEANS. ON EXPOSED JUNCTION BOXES IN PUBLIC AREAS, MARK ON INSIDE OF COVER. MARK ALL FIRE ALARM SYSTEM JUNCTION BOXES AND COVERS WITH A RED PAINT AND "FA" NOTATION. APPROPRIATELY IDENTIFY ALL OTHER SPECIAL SYSTEM JUNCTION BOXES WITH SHEET STEEL COVERS.

CONDUIT – BRANCH CIRCUIT CONDUCTORS SHALL BE INSTALLED IN CONDUIT, OR BE METAL CLAD CABLE OR SHALL BE METAL CLAD HEALTH CARE FACILITIES RATED UPON APPROVAL BY THE OWNER AND AS PERMITTED BY THE NEC AND LOCAL CODES. ALL SURFACE MOUNTED DEVICES AND WIRING SHALL BE INSTALLED IN METALLIC RACEWAY. RACEWAY AND WIRING IN CLASSIFIED AREAS SHALL COMPLY WITH GOVERNING CODES. UTILIZE SHORT EXTENSIONS OF FLEXIBLE CONDUIT, PROPERLY SUPPORTED, FOR CONNECTION OF ALL MOTORS AND OTHER EQUIPMENT SUBJECT TO VIBRATION. UTILIZE LIQUID-TIGHT FLEXIBLE CONDUIT FOR MOTOR AND EQUIPMENT CONNECTIONS IN WET LOCATIONS. INSTALL FITTINGS TO ACCOMMODATE EXPANSION AND CONTRACTION WHERE RACEWAY CROSSES CONTROL AND EXPANSION JOINTS. PAINT ALL EXPOSED RACEWAYS IN FINISHED LOCATIONS, TO MATCH THE SURFACE TO WHICH IT IS ATTACHED OR CROSSES. PROVIDE GALVANIZED OR CADMIUM PLATED, ONE PIECE PRESSED STEEL OUTLET BOXES 4 INCH SQUARE, 1 ½ INCHES DEEP MINIMUM SIZE FOR USE IN INTERIOR AREAS. PROVIDE CAST ALUMINUM OR FERALLOY TYPE BOXES WITH GASKETED COVER, THREADED HUBS AND NEMA 3R RATING FOR USE IN EXTERIOR OR WET LOCATIONS. BOXES IN RATED WALLS/CEILINGS SHALL BE RATED FOR RESPECTIVE ASSEMBLY. PROVIDE OUTLET AND JUNCTION BOXES AS SHOWN ON THE DRAWINGS, AND AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS, DEVICE INSTALLATION AND CODE COMPLIANCE. DO NOT INSTALL BOXES BACK-TO-BACK IN WALLS. PROVIDE WALL STUD SEPARATION FOR MINIMUM SOUND TRANSMISSION. USE MULTIPLE-GANG BOXES WHERE MORE THAN ONE DEVICE ARE MOUNTED TOGETHER. ADEQUATELY SUPPORT BOXES INDEPENDENTLY OF CONDUIT. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES MOUNTED ABOVE COUNTERS, BENCHES AND BACKSPLASHES WITH ARCHITECTURAL ELEVATIONS. COMPLETELY AND THOROUGHLY SWAB RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS.

CONDUCTORS – ALL CONDUCTORS SHALL BE COPPER WITH TYPE XHHW, THWN, THW OR THHN INSULATION. WIRING IN LIGHTING FIXTURE CHANNELS SHALL BE COPPER WITH TYPE THHN OR OTHER INSULATION RATED 90 DEGREES C OR HIGHER, 600 VOLT. PULL ALL CONDUCTORS INTO THE RACEWAY AT THE SAME TIME. COLOR CODE CONDUCTORS AS FOLLOWS: 120/208 VOLT SYSTEMS: BLACK, RED, BLUE AND WHITE; 277/480 VOLT SYSTEMS: BROWN, ORANGE, YELLOW AND WHITE WITH AN IDENTIFIABLE COLORED STRIPE OR GRAY. USE PROPERLY SIZED INSULATED SPRING WIRE CONNECTORS WITH INSULATING CAPS FOR ALL CONDUCTORS #8 AWG AND SMALLER. TERMINATE #6 AWG AND LARGER CONDUCTORS WITH CRIMP OR COMPRESSION TYPE AND INSULATE WITH PROPERLY SIZED 600 VOLT RATED HEAT SHRINK TUBING TO EQUAL OR EXCEED THE INSULATION QUALITY OF THE TERMINATED CONDUCTOR.

OUTLET BOXES – PROVIDE OUTLET AND JUNCTION BOXES OF A TYPE SUITABLE FOR CONDITIONS WHERE INSTALLED AND AS PERMITTED BY THE NEC. PROVIDE GALVANIZED OR CADMIUM PLATED, ONE PIECE PRESSED STEEL OUTLET BOXES 4 INCH SQUARE, 1 1/2 INCHES DEEP MINIMUM SIZE FOR USE IN INTERIOR AREAS. PROVIDE CAST ALUMINUM OR FERALLOY TYPE BOXES WITH GASKETED COVER, THREADED HUBS AND NEMA 3R RATING FOR USE IN EXTERIOR OR WET LOCATIONS. PROVIDE OUTLET AND JUNCTION BOXES AS SHOWN ON THE DRAWINGS, AND AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS, DEVICE INSTALLATION AND CODE COMPLIANCE. BOXES IN RATED WALLS/CEILINGS SHALL BE RATED FOR RESPECTIVE ASSEMBLY. DO NOT INSTALL BOXES BACK-TO-BACK IN WALLS. PROVIDE WALL STUD SEPARATION FOR MINIMUM SOUND TRANSMISSION. LOCATE BOXES IN MASONRY WALLS TO REQUIRE CUTTING OF MASONRY UNIT CORNER ONLY. COORDINATE MASONRY CUTTING TO ACHIEVE NEAT OPENINGS FOR BOXES. USE MULTIPLE-GANG BOXES WHERE MORE THAN ONE DEVICE ARE MOUNTED TOGETHER. ADEQUATELY SUPPORT BOXES INDEPENDENTLY OF CONDUIT. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES MOUNTED ABOVE COUNTERS, BENCHES AND BACKSPLASHES WITH ARCHITECTURAL ELEVATIONS.

PANELBOARDS – PROVIDE DEAD-FRONT CIRCUIT BREAKER PANELBOARDS WITH COPPER BUS SIZE, MAIN CIRCUIT BREAKER, MAXIMUM INTERRUPT RATING, AND NUMBER AND SIZE OF BRANCH CIRCUITS AS SHOWN ON THE DRAWINGS. CABINETS SHALL BE 5 3/4 INCHES DEEP BY 20 INCHES WIDE MINIMUM. PROVIDE FLUSH OR SURFACE COVERS, AS NOTED ON THE DRAWINGS, WITH CONCEALED TRIM CLAMPS, CONCEALED HINGE AND LOCK. PANELBOARD SHALL BE FACTORY FINISHED IN MANUFACTURER'S STANDARD GRAY ENAMEL. MOLDED CASE CIRCUIT BREAKERS SHALL BE BOLT-ON THERMAL MAGNETIC TRIP TYPE WITH COMMON TRIP HANDLE FOR ALL POLES. PROVIDE CIRCUIT BREAKERS UL LISTED AS TYPE HCAR FOR AIR HANDLING/CONDITIONING CIRCUITS. PROVIDE UL LISTED BREAKERS AS SWD FOR LIGHTING CIRCUITS SWITCHED AT THE PANEL. PROVIDE CIRCUIT BREAKERS SUPPLYING MULTIWIRE CIRCUITS WITH COMMON TRIP HANDLES OR AN APPROVED MEANS OF SIMULTANEOUSLY DISCONNECTING ALL UNGROUNDED CONDUCTORS. PROVIDE UL CLASS A GROUND FAULT INTERRUPTER CIRCUIT BREAKERS FOR GFCI CIRCUITS AS INDICATED ON THE DRAWINGS. GROUP UNGROUNDED AND GROUNDED CONDUCTORS OF EACH MULTIWIRE BRANCH CIRCUIT WITHIN THE PANEL WITH AN APPROVED MEANS. INSTALL PANELBOARDS PLUMB WITH TOP OF CABINET NO MORE THAN 6'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED ON THE DRAWINGS. PROVIDE TYPED OR NEATLY HANDWRITTEN CIRCUIT DIRECTORIES FOR EACH PANELBOARD WITH DETAILED DESCRIPTIONS OF EACH CIRCUIT TO CLEARLY IDENTIFY EACH CIRCUITS' SPECIFIC USE AND DISTINGUISH IT FROM ALL OTHERS. MEASURE LOAD CURRENTS OF EACH PANELBOARD FEEDER UNDER NORMAL OPERATING CONDITIONS, AND REARRANGE BRANCH CIRCUITS AS REQUIRED TO MAINTAIN A MAXIMUM 20 PERCENT CURRENT DIFFERENCE BETWEEN PHASE CONDUCTORS. REVISE CIRCUIT DIRECTORY TO REFLECT CIRCUITING CHANGES REQUIRED TO BALANCE PHASE LOADS. PROVIDE TWO ¾ INCH SPARE CONDUITS FOR FLUSH MOUNTED PANELS INTO ACCESSIBLE CEILING ABOVE AND CRAWL SPACE (IF PRESENT) BELOW.

RECEPTACLES – PROVIDE NEMA 5-20R DUPLEX GROUNDING TYPE RECEPTACLES WITH WHITE FINISH. RECEPTACLES SHALL BE UL NO. 498 APPROVED, SELF-GROUNDING, CERTIFIED TO COMPLY WITH NEMA WD-1. SCREW TERMINAL OR SCREW CLAMP TYPE ONLY. PROVIDE DUPLEX CONVENIENCE RECEPTACLES WITH CLASS A INTEGRAL GROUND FAULT CURRENT INTERRUPTER AND SPECIFIC-USE RECEPTACLES WHERE INDICATED ON THE DRAWINGS AND AS REQUIRED BY CODES. PROVIDE LISTED WEATHER RESISTANT TYPE RECEPTACLES WHERE LOCATED IN DAMP OR WET LOCATIONS. UNLESS OTHERWISE NOTED ON THE DRAWINGS, INSTALL RECEPTACLES 18 INCHES ABOVE FINISH FLOOR, 4 INCHES ABOVE COUNTERS AND BACKSPLASHES WITH GROUNDING POLE ON BOTTOM. UNLESS OTHERWISE NOTED DIMENSIONS ARE TO CENTERLINE OF OUTLET. LOCATE GROUND FAULT CURRENT INTERRUPTER TYPE RECEPTACLES SO THAT THEY ARE READILY ACCESSIBLE AS REQUIRED BY THE NEC.

SWITCHES – PROVIDE NEMA WD-1 20, UL NO. 20 LISTED, 20 AMPERE, 120/277 VOLT AC GENERAL USE SNAP SWITCH, WITH GROUNDING SCREW AND SELF GROUNDING CLIP, WITH WHITE TOGGLE, SINGLE POLE, DOUBLE POLE, THREE WAY OR FOUR WAY AS INDICATED ON THE DRAWINGS. PROVIDE LINE VOLTAGE RED LIGHTED NEON TOGGLE PILOT LIGHT SWITCHES AS INDICATED ON THE DRAWINGS. PROVIDE DIMMERS OF A TYPE COMPATIBLE WITH AND RATED FOR FIXTURES TO BE CONTROLLED. INSTALL WALL DIMMERS TO ACHIEVE FULL RATING AFTER DERATING FOR GANGING AS INSTRUCTED BY MANUFACTURER. DO NOT SHARE NEUTRAL CONDUCTOR ON LOAD SIDE OF DIMMERS. INSTALL SWITCHES 48 INCHES ABOVE FINISHED FLOOR, 'OFF' POSITION DOWN. SWITCH BOXES SHALL INCLUDE A "GROUNDED CONDUCTOR" (NEUTRAL) OF THE CONTROLLED LIGHTING CIRCUIT AS REQUIRED BY NEC 404.2(C).

DEVICE PLATES – PROVIDE UL LISTED ONE PIECE ROUNDED EDGE FLUSH DEVICE PLATES WITH WHITE FINISHM, METAL COUNTER SUNK SCREWS TO MATCH DEVICE PLATE. PROVIDE GALVANIZED DEVICE PLATES WHERE EXPOSED WIRING IS PERMITTED. PROVIDE WEATHERPROOF GASKETED COVERS FOR ALL OUTLETS IN WET LOCATIONS OR ON THE EXTERIOR OF THE BUILDING. PROVIDE METALLIC 'EXTRA DUTY', 'WET WHILE IN USE' WEATHERPROOF COVERS WHEN MANDATED BY THE AUTHORITY HAVING JURISDICTION.

LIGHTING EQUIPMENT – PROVIDE AND INSTALL ALL LIGHTING EQUIPMENT OR APPROVED EQUAL AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THE DRAWINGS. PROVIDE LIGHTING EQUIPMENT AS A COMPLETE SYSTEM, WIRED, ASSEMBLED, WITH PROPER FLANGES, MOUNTING SUPPORTS, HARDWARE, ETC. ALL LIGHTING EQUIPMENT TO BE INSTALLED IN LAY-IN TYPE CEILINGS SHALL BE PHYSICALLY ATTACHED TO THE GRID SYSTEM AND PROVIDED WITH SAFETY SUPPORTS, CAPABLE OF SUPPORTING 200 POUNDS, SECURELY FASTENED TO A MINIMUM OF TWO OPPOSING CORNERS OF THE LIGHT FIXTURE AND THE BUILDING STRUCTURE TO SUPPORT THE FIXTURE IN THE EVENT OF A CEILING SUPPORT FAILURE. UNLESS OTHERWISE NOTED ON THE DRAWINGS, ALL LAMPS AND LED EQUIPPED LUMINAIRES SHALL HAVE A COLOR TEMPERATURE OF 4000 DEGREE K WITH A MINIMUM CRI OF 82. PROVIDE BALLAST DISCONNECTING MEANS FOR FLUORESCENT LUMINARIES REQUIRING DOUBLE ENDED LAMPS AS REQUIRED BY NEC 410.130.

EQUIPMENT CONNECTIONS – PROVIDE AND INSTALL WIRING AND CONNECTIONS OF EQUIPMENT REQUIRING ELECTRICAL POWER BUT SPECIFIED UNDER OTHER DIVISIONS OF THE PROJECT. EQUIPMENT SHALL INCLUDE BUT IS NOT LIMITED TO OVERHEAD DOORS, FOOD SERVICE EQUIPMENT, ELEVATORS, MOTORS, PUMPS, WATER HEATERS, HVAC EQUIPMENT, ETC. REVIEW EQUIPMENT SUBMITTALS PRIOR TO INSTALLATION AND ELECTRICAL ROUGH-IN AND VERIFY THE LOCATION, SIZE, TYPE OF CONNECTIONS, AND THAT THE EQUIPMENT IS READY FOR ELECTRICAL CONNECTION. MAKE WIRING CONNECTIONS IN THE CONTROL PANEL OR IN THE WIRING COMPARTMENT OF THE EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PROVIDE INTERCONNECTING WIRING AND LOCAL DISCONNECTS WHERE REQUIRED.

DISCONNECT SWITCHES – PROVIDE NEMA KS1-1990, UL 98 LISTED 600V OR 250V HEAVY DUTY FUSED OR NON-FUSED QUICK-MAKE, QUICK BREAK, LOAD INTERRUPTER, ENCLOSED KNIFE SWITCHES WITH EXTERNALLY OPERABLE HANDLE INTERLOCKED TO PREVENT OPENING FRONT COVER WITH SWITCH IN ON POSITION, HANDLE LOCKABLE IN OFF POSITION, AND FUSE CLIPS DESIGNED TO ACCOMMODATE CLASS R FUSES AND REJECT ALL OTHER CLASS FUSES. ENCLOSURES SHALL BE NEMA 1 OR 3R AS INDICATED ON THE DRAWINGS. INSTALL ANSI/UL 198E CLASS RK5 250 OR 600 VOLT ONE-TIME FUSES WITH A 200,000 RMS AMPERE INTERRUPTING FOR DISCONNECTS WHICH SUPPLY MOTORS OR OTHER LOADS WITH A HIGH INRUSH CURRENT, INSTALL ANSI/UL 198E CLASS RK1 250 OR 600 VOLT ONE-TIME FUSES WITH A 200,000 RMS AMPERE INTERRUPTING FOR DISCONNECTS WHICH SUPPLY OTHER LOADS. PROVIDE FUSE AS SIZED ON THE DRAWINGS, VERIFY PROPER SIZING WITH ACTUAL EQUIPMENT SUPPLIED. PROVIDE WITH MECHANICAL LUGS SIZED TO ACCOMMODATE THE SUPPLY AND LOAD CONDUCTORS FOR EACH DISCONNECT AS SCHEDULED ON THE DRAWINGS.

FRACTIONAL HORSEPOWER MANUAL STARTER – NEMA ICS 2; AC GENERAL-PURPOSE CLASS A MANUALLY OPERATED FULL-VOLTAGE CONTROLLER FOR FRACTIONAL HORSEPOWER INDUCTION MOTORS WITH THE NUMBER OF POLES AS REQUIRED BY THE LOAD SERVED, THERMAL OVERLOAD UNIT(S), RED PILOT LIGHT, AND TOGGLE OPERATOR.

TELECOMMUNICATION – PROVIDE TELEPHONE AND DATA JACKS QUANTITY AS INDICATED ON THE DRAWINGS WTH INDIVIDUAL CATEGORY 6 CABLE HOMERUN TO BE TERMINATED ON THE NEW PATCH PANEL LOCATED IN THE IT RACK IN ELECTRICAL ROOM. TELEPHONE JACKS SHALL BE VOICE GRADE, 8 CONDUCTOR PUNCH DOWN TYPE DATA JACKS SHALL BE CATEGORY 6, 8 CONDUCTOR, PUNCH DOWN TYPE WITH T568B WIRING CONFIGURATION. WALL PLATES SHALL HAVE A FINISH MATCHING JACKS, HAVE OPENINGS AS REQUIRED FOR QUANTITY OF JACKS REQUIRED. DATA PATCH PANEL SHALL MEET THE REQUIREMENTS OF T1A/E1A 568 STANDARD, HAVE 48 CATEGORY 6 48 PORTS (GROUPS IN EIGHT 6-PORT MODULES), T568B WIRING CONFIGURATION AND 19 INCH WIDTH. BUILDING TELEPHONE AND DATA SYSTEM CABLES SHALL MEET THE REQUIREMENTS OF EIA/T1A 568 STANDARD ANO BE SOLID BARE COPPER, CATEGORY 6 PLENUM RATED, 4 PAIR UTP, 24 AWG. TELEPHONE CABLES SHALL BE WHITE, AND DATA CABLES SHALL BE BLUE. CABLES SHALL BE CONTINUOUS AND WITHOUT SPUCES FROM SOURCE TO OUTLET. CONCEAL CABLES WITHIN CEILINGS AND WALLS OF RNISHEO AREAS. CABLES MAY BE EXPOSED IN UNFINISHED AREAS BUT NOT RUN ON FLOORS OF MECHANICAL EQUIPMENT SPACES OR IN SUCH A WAY THAT THEY OBSTRUCT ACCESS TO. OPERATION OF, OR SERVIONG OF EQUIPMENT.RUN EXPOSED CABLES PARALLEL TO OR AT RIGHT ANGLES TO BUILDING STRUCTURE LINES. KEEP CABLES 6 INCHES MINIMUM FROM HOT WATER PIPES. SUPPORT CABLES USING APPROVED STAPLES, CABLE TIES, STRAPS, HANGERS, OR SIMILAR RTT1NGS SPACED EVERY 3 FEET. MAKE CONNECTIONS AT PATCH PANEL AND INSTALL LABEL ON PATCH PANEL FOR EACH TERMINATION TO IDENTIFY LOCATION SERVED. A TELECOM BACK BOARD MOUNTED ON THE WALL SHOULD BE PROVIDED TO INSTALL ACCESS CONTROL PANEL.

FIRE ALARM – NOT ALL REQUIRED FIRE ALARM COMPONENTS AND DEVICES ARE NOT SHOWN ON THE DRAWINGS. DESIGN OF THE FIRE ALARM SYSTEM IS TO BE COMPLETED BY NICET LEVEL 3 OR HIGHER DESIGNER PER NFPA 72, IBC AND AHJ REQUIREMENTS. PROVIDE A UL AND FM LISTED ELECTRICALLY SUPERVISED FIRE ALARM SYSTEM INCLUDING ALL LABOR, EQUIPMENT, MATERIALS AND SERVICES TO FURNISH AND INSTALL A COMPLETE AND FULLY OPERATIONAL CODE COMPLIANT SYSTEM. PROVIDE THE SYSTEM WITH THE SUFFICIENT NOTIFICATION APPLIANCE CIRCUITS, INITIATING DEVICE CIRCUITS AND DATA CIRCUITS TO PROVIDE A COMPLETE INSTALLATION ALONG WITH 25% SPARE CAPACITY FOR FUTURE GROWTH. THE SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH NFPA 72 AND 101 AND ANY LOCAL AMENDMENTS. MAKE ALL CONNECTIONS TO DOOR RELEASE DEVICES, SPRINKLER FLOW SWITCHES, SPRINKLER VALVE TAMPER SWITCHES, FIRE SUPPRESSION SYSTEM, CONTROL PANELS AND DUCT SMOKE DETECTORS AS APPLICABLE TO THE INSTALLATION. THE FIRE ALARM SYSTEM SHALL BE INSTALLED AND FULLY TESTED UNDER THE SUPERVISION OF A TRAINED MANUFACTURER'S REPRESENTATIVE AND SHALL DEMONSTRATE PERFORMANCE AS INTENDED AND REQUIRED TO COMPLY WITH ALL REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

PENETRATIONS OF FIRE BARRIERS – ALL ELECTRICAL PENETRATIONS THROUGH FIRE RATED BARRIERS SHALL BE SEALED IN ACCORDANCE WITH NEC ARTICLE 300.21 AND THE FOLLOWING:

ALL HOLES OR VOIDS CREATED TO EXTEND ELECTRICAL SYSTEMS THROUGH FIRE RATED FLOORS, WALLS OR CEILING SHALL BE SEALED WITH AN ASBESTOS-FREE INTUMESCENT FIRE STOPPING MATERIAL CAPABLE OF EXPANDING 8 TO 10 TIMES WHEN EXPOSED TO TEMPERATURES 250 DEGREES F OR HIGHER. MATERIALS SHALL BE SUITABLE FOR THE FIRE STOPPING OF PENETRATIONS MADE BY STEEL, GLASS, PLASTIC AND SHALL BE CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME, SMOKE AND GASES IN COMPLIANCE WITH THE REQUIREMENTS OF ASTM E814, UL 1479 AND THE UL FIRE RESISTANCE DIRECTORY REQUIREMENTS FOR THROUGH-PENETRATION FIRESTOP DEVICES (XHCR). THE RATING OF THE FIRE STOPS SHALL BE THE SAME AS THE TIME-RATED FLOOR, WALL OR CEILING ASSEMBLY. INSTALL FIRE STOPPING MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. UNLESS PROTECTED FROM POSSIBLE LOADING OR TRAFFIC, INSTALL FIRE STOPPING MATERIALS IN FLOORS HAVING VOID OPENINGS OF FOUR (4) INCHES OR MORE TO SUPPORT THE SAME FLOOR LOAD REQUIREMENTS AS THE SURROUNDING FLOOR.

SEISMIC RESTRAINTS – PROVIDE SEISMIC BRACING AND SUPPORT OF ALL ELECTRICAL EQUIPMENT AS REQUIRED BY THE IBC AND OTHER APPLICABLE CODES. EQUIPMENT TO BE BRACED AND SUPPORTED SHALL INCLUDE BUT IS NOT LIMITED TO SERVICE EQUIPMENT, LIGHTS, PANELS, CONDUIT, ETC. WHEN REQUIRED BY THE LOCAL JURISDICTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING STRUCTURAL RESTRAINTS DESIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED BY THE STATE OF ALASKA.

1 E5.01 ONELINE DIAGRAM, PANEL SCHEDULES

SCALE: N/A

NEW PANEL A SCHEDULE — 100A MLO — 120/240V,1PH,3W

CKT	AMP	POLE	LOAD DESCRIPTION	PHASE A VA		PHASE B VA		LOAD DESCRIPTION	POLE	AMP	CKT	
1	20	1	LTG-1ST FLOOR SOUTH	1390	1080			REC-COURTROOM 2 NORTH/ TABLE	1	20	2	
3	20	1	LTG-1ST FLOOR NORTH			1185	1260	REC-COURTROOM 1 SOUTH/TABLE	1	20	4	
5	20	1	LTG-EXTERIOR	205	1070			REC-COURTROOM 1 NORTH/EAST	1	20	6	
7	20	1	REC-JANITOR 113, STAIR 114			500	1080	REC-OFFICE 122	1	20	8	
9	20	1	REC-CIRCLE ROOM 112	1440	1080			REC-OFFICE 120	1	20	10	
11	20	1	REC-WAITING AREA 100			900	900	REC-OFFICE 119A	1	20	12	
13	20	1	REC-HALL 101, DF-1	1080	900			REC-OFFICE 121	1	20	14	
15	20	1	REC-OFFICE 103, RESTROOM 102			900	700	REC-CORRIDOR 110	1	20	16	
17	20	1	REC-OFFICE 104	1080	720			REC-OFFICE 117	1	20	18	
19	20	1	REC-OFFICE 105			1260	900	REC-HALL 108	1	20	20	
21	20	1	REC-RESTROOM 108A, 108B	540	720			REC-JANITOR 190 RESTROOM 109	1	20	22	
23	20	1	REC-OFFICE 107			720	800	REC-REFRIGERATOR 118	1	20	24	G
25	20	1	SPARE					SPARE	1	20	26	
27	20	1	SPARE					SPARE	1	20	28	
29	20	1	SPARE					SPARE	1	20	30	
31	20	1	SPARE					SPARE	1	20	32	
33	20	1	SPARE					SPARE	1	20	34	
35	20	1	SPARE					SPARE	1	20	36	
37	20	1	SPARE					SPARE	1	20	38	
39	20	1	SPARE					SPARE	1	20	40	
41	20	1	SPARE					SPARE	1	20	42	
CONNECTED LOAD (VA)					11,305		11,105	22,410 VA				
CONNECTED LOAD (AMPERES)					94		93	93 A				
DEMAND LOAD (VA)					11,704		11,601	23,305 VA				
DEMAND LOAD (AMPERES)					98		97	97 A				
AMPERE INTERUPT RATING								10,000 AIC				

G - GROUND FAULT TYPE CIRCUIT BREAKER

NEW PANEL B SCHEDULE — 100A MLO — 120/240V,1PH,3W

CKT	AMP	POLE	LOAD DESCRIPTION	PHASE A VA		PHASE B VA		LOAD DESCRIPTION	POLE	AMP	CKT
1	20	1	LTG-BASEMENT/CRAWLSPACE	840	500			CP-2	1	20	2
3	20	1	REC-MECH VENT ROOM 005 SOUTH			720	500	HWCP-1	1	20	4
5	20	1	HRV-1	915	530			CP-1	1	20	6
7	20	1	EF-3, EF-4			200	500	BOILER CP	1	20	8
9	20	1	REC-STORAGE 001 WEST RESTROOM	900	1260			REC-CIRCLE ROOM 1	1	20	10
11	20	1	REC-STROAGE 001 EAST			720	1200	REC-COPIER 118	1	20	12
13	20	1	REC-IT QUAD A	360	360			REC-BREAK COUNTER A	1	20	14
15	20	1	REC-IT QUAD B			360	1500	REC-BREAK COUNTER DEDICATED	1	20	16
17	20	1	REC-IT ROOM, EF-2	360	1070			REC-COURT ROOM 2 SOUTH/EAST, CF-1	1	20	18
19	20	1	REC-ACCESS CONTROL QUAD A			360	540	REC-BREAK 118	1	20	20
21	20	1	REC-ACCESS CONTROL QUAD B	360	720			REC-BASEMENT SOUTH	1	20	22
23	20	1	REC-MECHANICAL ROOM, GT-1			720	720	REC-MECH VENT ROOM 005 NORTH	1	20	24
25	20	1	BOILER	500	300			SPRINKLER TAMPER/FLOW SWITCH	1	20	26
27	20	1	WATER GENERATOR PUMP			500		SPARE	1	20	28
29	20	1	SPARE					SPARE	1	20	30
31	20	1	SPARE					SPARE	1	20	32
33	20	1	SPARE					SPARE	1	20	34
35	20	1	SPARE					SPARE	1	20	36
37	20	1	SPARE					SPARE	1	20	38
39	20	1	SPARE					SPARE	1	20	40
41	20	1	SPARE					SPARE	1	20	42
CONNECTED LOAD (VA)					8,175		8,040	16,215 VA			
CONNECTED LOAD (AMPERES)					68		67	68 A			
DEMAND LOAD (VA)					8,385		8,040	16,425 VA			
DEMAND LOAD (AMPERES)					70		67	68 A			
AMPERE INTERUPT RATING								10,000 AIC			

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KENAITZE INDIAN TRIBE

TRIBAL COURTHOUSE

508 UPLAND AVE. KENAI, ALASKA

Revisions		
No.	Description	Date

Drawn by BCM	Date 07-16-2021
Checked BCM	Job No. 2021.021

Sheet Contents
ONELINE DIAGRAM, PANEL SCHEDUELS

Sheet No.
E5.01

Plot Date Time: 4/23/2021 9:30:21 AM

ARCHITECTS SUPPLEMENTAL INSTRUCTION (ASI)

DISTRIBUTION:
☒OWNER
☒ARCHITECT
☐CONTRACTOR
☐FIELD
☐OTHER

ASI NO.: 001 Special Systems Coordination

PROJECT: Kenaitze Indian Tribe- Tribal Courthouse

CONTRACTOR: To Be Determined **DATE**: 22-Dec-21

TO:
Kenaitze Indian Tribe
150 North Willow St.
Kenai, Alaska 99611
ATTN: James Rendle **JOB NO.:** 21014.01-**07-05**

THIS COMMUNICATION AUTHORIZES NO CHANGE IN PROJECT SCOPE, TIME OR PRICE. IF COMMUNICATION INVOLVES ANY SUCH CHANGE NOTIFY THE ARCHITECT IMMEDIATELY AND INCLUDE A BREAKDOWN OF ANY COST INVOLVED.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN.

INSTRUCTIONS:

Specifications

Table of Contents

- Remove Section 017419 Construction Waste Management Disposal
- Add Section 062023 Interior Finish Carpentry
- Add Section 280000 Special Systems

011000 Summary

- Remove 1.5 B. 1. Special systems to be completed by owner.
- Remove 1.6 B. 1. Special Systems
- Add 1.6 B. 3. Court Rooms – Display Cases are owner provided and installed.

012600 Contract Modification Procedures

- Add 1.5 B. Contractor's self-performed work for Overhead and Profit shall not exceed a 15% markup. Subcontractor's markup up for self-performed to includes any sub-tier contractors or subcontractors, shall not exceed 15% for Overhead and Profit. General Contractor's mark up on subcontractor's work shall not exceed 10% for Overhead and Profit. No markup is permitted on Change Orders for Bonding and Insurances.
- Add 1.5 C. Under no circumstances shall the contractor stop work or delay the project due to disagreements on change order cost or pricing.

- Add 1.5 D. Owner reserves the right to initiate Change Order Scope of Work on a Time and Material basis.

013100 Project Management and Coordination

- Remove 1.9 B. 2. n. Sustainable design requirements.
- Remove 1.9 B. 2. w. Construction waste management and recycling.
- Remove 1.9 C. 2. h. Sustainable design requirements
- Remove 1.9 D. 3. e. Requirements for completing design documentation.
- Remove 1.9 E. 3. b. 5) Status of sustainable design documentation.

013200 Construction Progress Documentation

- Modify 1.4 G. Daily Construction Reports: Submit at daily intervals.
- Remove 'sustainalbe design documents' from 1.10 D. 5.

017300 Execution

- Remove 2.1 A. 1.For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
- Remove 'Comply with waste disposal requirements in [Section 01500 "Temporary Facilities and Controls"}{Section 017419 "Construction Waste Management and Disposal"} from 3.8 G.

017700 Closeout Procedures

- Remove 1.6 B. 6. Submit sustainable design submittals not previously submitted.

087100 Door Hardware

- 3.9 Door Hardware Schedule
  - Revise Hardware Group 01, 03, 04 Card Reader to be by Convergint/ATS

096816 Sheet Carpeting

- Remove 1.3 F. Sustainable Product Certification Provide ANSI/NSF 140 certification for carpet products.

Sheet C2

- Revise note 'Existing greenhouse removed by owner. Contractor to demo and remove existing concrete slab. ' to read 'Owner to remove existing greenhouse and concrete slab'
- Revise note 'Demolish and remove existing 2 story building' to read 'Owner to remove existing 2-story structure and infill crawlspace'.
- Revise note 'Coordinate demo of existing utility service line w/utility company' to read 'Coordinate demo of existing water, sewer, underground telephone, cable and fiber optics remaining from two story building demolition.'
- Revise existing note to read 'Contractor shall coordinate existing underground comm line relocation due to existing routing under new building addition with ACS Utility Company. Utility Company shall re-route and re-use existing comm line or re-route and replace as necessary. Owner shall pay utility company directly for this work scope. See sheet C3.'

Sheet C3

- Add temporary construction fence
- Add note 'Temporary construction fence by GC'
- Add new pavement hatches over utility trenches
- Add note 'Remove and replace existing AC pavement and concrete sidewalk/curb as required to perform water and sewer utility work.

- Revise existing note to read 'ACS Utility company re-routing of underground communication line – see sheet C2 and electrical drawings.'

Sheet E0.02

- Revise Sheet Note 3. Contractor shall coordinate existing underground comm line relocation due to existing routing under new building addition with ACS Utility Company. Utility Company shall re-route and re-use existing comm line or re-route and replace as necessary. Owner shall pay utility company directly for this work scope. See drawing E0.03 and Civil drawings for additional information.

Sheet E0.03

- Revise Sheet Note 3. Contractor shall coordinate proposed re-routing of underground comm line with ACS Utility Company. See drawing E0.02 and Civil drawings for additional information.

Sheet E3.01

- Revise General Note 4. Contract with Kenaitze's preferrerd vendors Integrated Communications Designs, Convergint Technologies and incorporate their construction schedules into the overall project construction schedule. See ICD and Convergint Technologies special systems proposals for additional information relating to the vendor provided scope of work and materials to provide complete and operable special systems package.

ATTACHMENTS:

BY: Jacqueline Edwards, Devon Lamothe, Matthew Dura